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Volume 25 JUNE 1956 Number 6

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This Journal is dedicated to the advancement of sound industrial medicine, including the surgery of industrial trauma. To that end its varying contents will embrace scientific papers, reports, digests, news items and official statements, together with editorial comment. The editorial policy is to avoid undue censorship. Some contributions ably prepared will be published although contravening the personal opinions of the editors. Care will be exercised in checking the accuracy of known facts, as printed, but in all other respects statements and opinions are those of the author and may not be shared by the editors. On any article, the editors reserve the right to comment favorably or otherwise, in the current or any subsequent issue. On this basis, contributions are invited. The opinions expressed in any contributions, including the editorials of this Journal, do not necessarily reflect the attitude or opinions of any associated organization.

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THOMAS E. McGRAW, M.D., has been appointed Philadelphia Plant Medical Director for Electric Storage Battery Company's Exide Industrial Division. He succeeds GILBERT B. MEYERS, M.D., now with Radio Corporation of America. DR. McGRAW is a native Philadelphian. Following his graduation in 1951 from Temple University Medical School he interned at Frankford Hospital, and was for three years a resident in internal medicine there. He received his Bachelor of Arts Degree from Mansfield (Pennsylvania) State Teachers College. In World War II he served four and a half years as a navigator in the U.S. Army Air Force. Among his memberships: American Medical Association, Philadelphia County Medical Society, and Northeast Medical Club.

WILLIAM S. CRAWFORD, M.D., Medical Director, Carter Oil Company, Tulsa, Oklahoma, for the past 26 years, retired May 1, 1956. DR. CRAWFORD was born at Winnsboro, South Carolina, in May, 1891, and is a graduate of the Medical College of South Carolina. He went to Carter Oil as Medical Director in 1930. Prior to that time his professional experience included two years of general practice, 10 years as an Army medical officer, and two years in industrial medicine—with Dodge and Plymouth, in Detroit. During his tenure as Carter's Medical Director, he guided the expansion of his Department from its beginning, in 1930, with one doctor and a part-time stenographer, to a current staff of three doctors, three nurses, two technicians, and one secretary, all located in the company's Tulsa office. In addition, there are two

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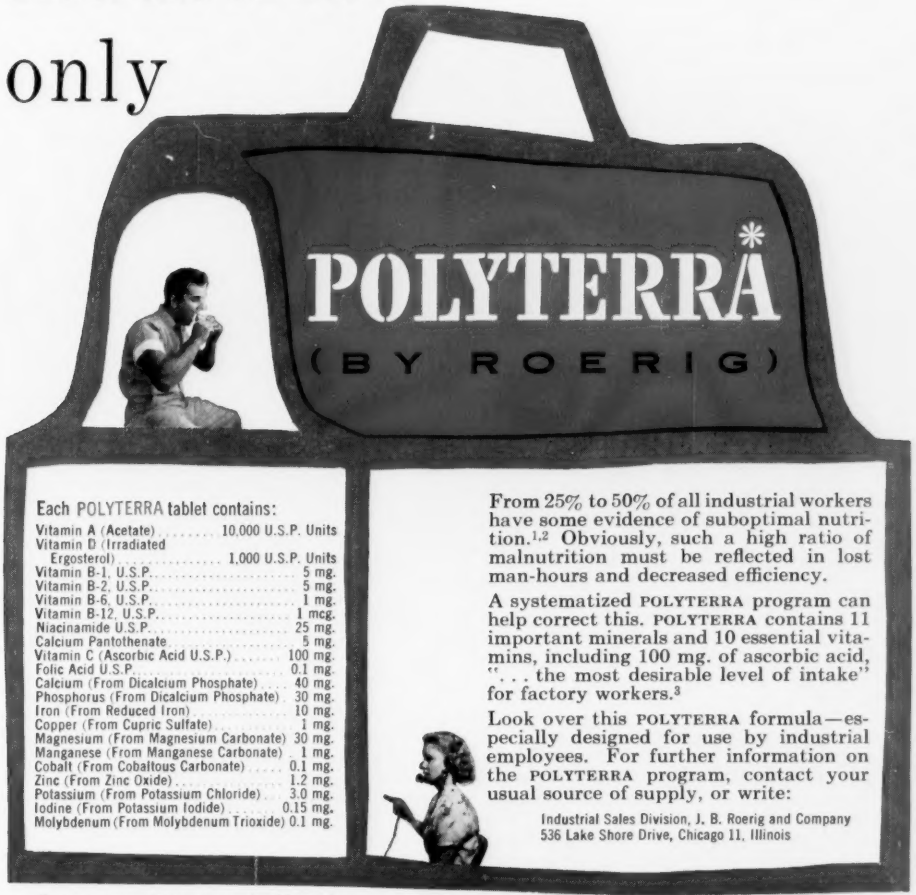

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nurses in the Billings, Montana, refinery Medical Department. DR. CRAWFORD has been active in county and state medical societies; is a member of the American Medical Association, the Southern Medical Association, and the INDUSTRIAL MEDICAL ASSOCIATION.

TOM HALL MITCHELL, M.D., Tulsa, succeeded DR. CRAWFORD as Carter Oil Company's Medical Director, as of May 1, 1956. DR. MITCHELL is a native of Bessemer, Alabama, and a graduate of the Medical College of Virginia. He had served in the capacity of Assistant Medical Director at Carter Oil since joining the Medical Department in 1938. His previous professional experience included four years of private practice as a urologist in Mobile, Alabama, and four years in the Medical Corps during World War II, where he attained the rank of Lieutenant Colonel. Working as an administrative team for the past 18 years, DR. CRAWFORD and DR. MITCHELL have been directly responsible for the expansion of Carter's medical program for its employees to an annual average of 1600 physical check-up and 800 preplacement examinations. The company's Medical Department renders no patient treatment but stresses precautionary physical examinations. These are handled in the modernly equipped Tulsa office and in a completely equipped mobile medical examination unit, which provides physical examinations to Carter employees at locations throughout the company's 27-state operating territory.

AMERICAN ACADEMY OF OCCUPATIONAL MEDICINE, at a meeting of the Board of Directors, May 16, 1956, elected the following physicians to membership in the Academy: CECIL R. BRADFORD, M.D., E. I. du Pont de Nemours & Company, Aiken, South Carolina; RALPH W. HASWELL, M.D., U.S. Naval Medical School, Bethesda, Maryland; THOMAS W. NALE, M.D., Union Carbide & Carbon Corporation, New York; CHARLES H. PAINE, JR., M.D., E. I. du Pont de Nemours & Company, Chattanooga, Tennessee; GORDON W. PETERSEN, M.D., Kimberly-Clark Corporation, Neenah, Wisconsin; OTTO J. PRESTON, M.D., Chevrolet-Flint Manufacturing Division, Flint, Michigan; LLOYD B. SHONE, M.D., Captain, (MC) USN, Occupational Health Branch, Bureau of Medicine and

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69th Annual Meeting, April 9-11, 1957, at the Drake Hotel, Chicago

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JOSEPH T. ANDREWS, M.D., Secretary, WESTERN NEW YORK SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY, reports that the Mid-Winter meeting of the Society was held at the premises of Eastman Kodak Company, Rochester, February 4, 1956. This meeting was well attended. A tour of Eastman Kodak's Medical Department was followed by an excellent program, arranged by the Kodak Plant Medical Staff. Five applicants were approved for Active Membership; one for Associate Membership. The Spring meeting of the Society will be held in Rome, New York, Saturday, June 2. Rome Cable Company will be the host. JAMES H. MCDONOUGH, M.D., is Medical Director at Rome Cable, and Counselor of IMA District No. 3.

REX H. WILSON, M.D., Medical Director, B. F. Goodrich Company, will preside at a corporate Industrial Health Conference, June 14-15 at the Goodrich Research Center in Brecksville, Ohio. The Company physicians, together with Personnel Directors and other members of management will attend. Among the pro-

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gram subjects: "Industrial Health and Employee Relations"— J. N. HART, Director, Employee Relations; "Industrial Health and Union Relations"—D. D. REICHOW, Director, Union Relations; "Medical Department Records"— R. H. WILSON, M.D.; "BFG Health Insurance Benefits"—J. E. SCHLACTER, Manager, Employee Insurance and Pension Program; "Medical Department Administration of BFG Health Insurance Benefits"—H. E. REED, M.D., Medical Division; "The BFG Disability Allowance Program"—J. E. SCHLACTER; "Medical Department Administration of BFG Disability Allowance Program"—R. H. WILSON, M.D.; "BFG Workmen's Compensation Program"—C. F. NUTTER, Manager, Workmen's Compensation; "Medical Procedures in Compensation Cases"—G. H. DONNELLY, M.D., Medical Division; "BFG Safety Program"—T. J. CAIN, JR.; "The Application of Medical Restrictions" —H. E. REED, M.D.; "BFG Industrial Hygiene"—W. E. MCCORMICK, Director, Industrial Hygiene and Toxicology; "Physical Examinations"—R. H. WILSON, M.D.; "The BFG Toxicology Program"—W. E. MCCORMICK; "Results of Corporate Visual Examinations"—GEORGE L. WILSON, Department of Industrial Hygiene and Toxicology. A "question-and-answer" period will feature the afternoon session June 15.

COLORADO STATE MEDICAL SOCIETY sponsored an Industrial Health Conference in Denver on March 23, 1956. At the morning session JOHN CONGER, PH.D., University of Colorado, talked on "Accident Proneness"; WILLIAM B. CONDON, M.D., on "Pulmonary Disease in Industry"; DOUGLAS W. MACOMBER, M.D., on "Industrial Accidents and Reconstructive Surgery"; GEORGE MARESH, M.D., on "Pre-employment Examinations." ERVIN A. HINDS, M.D., was Moderator. Following the session, guided tours were taken through the plant of Gates Rubber Company, and the plant of Shwayder Brothers (Conference host), manufacturer of Samsonite Luggage. Luncheon was provided by Shwayder Brothers. At the afternoon session—at which ROBERT PORTER, M.D., President of the Colorado State Medical Society, was Moderator—ROBERT MCKENNA, M.D., talked on "Heart Disease and Rehabilitation of Cardiacs"; EDWARD DELAHANTY, M.D., on "Alcoholism in Industry";

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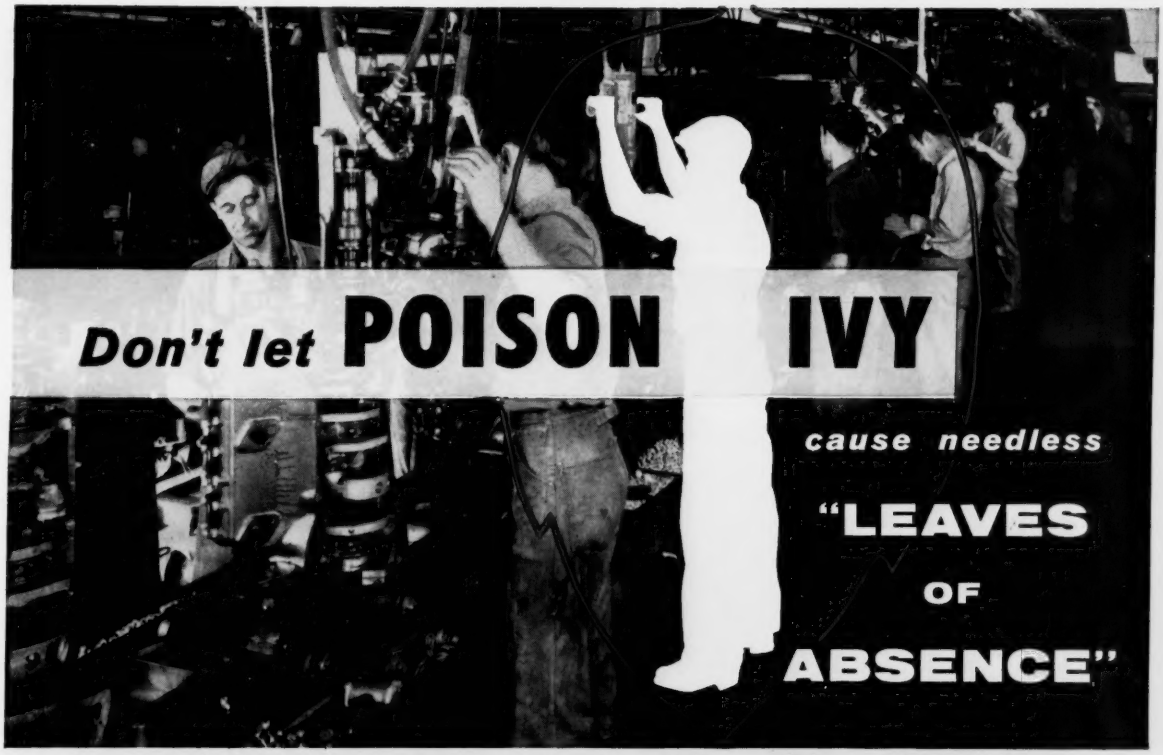

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ROBERT COHEN, M.D., on "Emotions in Industry"; HENRY LEWIS, M.D., on "Contact Dermatitis in Industry." JOSEPH L. GLASER, M.D., Chairman of the Industrial Health Committee of the Colorado State Medical Society, comments: "Approximately 65 doctors participated in the Conference. This was a new enterprise for our State Society which proved quite successful. We plan to continue it every spring. To date we have received requests from three industrial organizations to be host at future Conferences."

GILBERT B. MEYERS, M.D., Camden Plant Physician, Radio Corporation of America, and BERNARD BEHREND, M.D., Medical Director, *Philadelphia Inquirer*—under the sponsorship of the Health and Welfare Council of Philadelphia and the Junior Chamber of Commerce—are guiding a pilot study of reactions to employee health education. The objects are: disseminate health information; to designate an appropriate person in the plant as a source of health information; and to provide experience for a full-scale industrial health education project. The study includes four industries classified according to their medical services: (1) Electric Storage Battery Company (battery manufacturer), full-time doctor and nurse; (2) *Philadelphia Inquirer* (newspaper), part-time doctor and full-time nurse; (3) Louis Goldsmith, Inc. (clothing industry), part-time doctor and nurse; (4) Nicetown Dye Works (dyer), no inplant medical services.

HAROLD BRANDALEONE, M.D., President, NEW YORK STATE SOCIETY OF INDUSTRIAL MEDICINE, and LEON BRODY, Ph.D., were Program Chairmen at a Symposium on "Medical Aspects of Motor Vehicle Accident Prevention," on May 23 in New York City. DAVID GOLDSTEIN, M.D., Professor of Industrial Medicine, Post-Graduate Medical School, New York University, and LEO WADE, M.D., Medical Director, Esso Standard Oil Company, were on the Conference Committee. The speakers were: WILLIAM P. SHEPARD, M.D., Chairman, AMA Council on Industrial Health, on "Human Factors in Safety"; HERMAN E. HILLBOE, M.D., Commissioner of Health, State of New York, on "The Conclusions and Recommendations of the Conference Workshop Groups"; and HOWARD A. RUSK, M.D., Director, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, on "The Importance of the Physician in Motor Vehicle Accident Prevention." NEW YORK STATE SOCIETY OF INDUSTRIAL MEDICINE was one of the cooperating agencies in the Symposium.

FRED A. BRYAN, M.D., Professor of Industrial Medicine, University of California, Los Angeles, believes that a great part of the increased knowledge and interest in the field of occupational medicine evidenced by his senior medical students is due to the "personalized" field trips experienced by them. E. P. LUONGO, M.D., Medical Director, General Petroleum Corporation, J. W. SCHILLING, M.D., Medical Director, and E. J. ZAIK, M.D., Assistant Medical Officer, Pacific Telephone and Telegraph Company, C. L. LLOYD, M.D., Medical Director, North American Aviation Company, and H. L. HERSCHENSON, M.D., Medical Director, Douglas Aircraft, personally conducted small groups on day-long trips through their company plants and Medical Departments, as well as lecturing informally on the theory and practice of occupational medicine. This small-group method of demonstrating the cooperation between the teaching and the practice of occupational medicine will be continued in the School of Medicine in Los Angeles, with the cooperation of managements in permitting the use of facilities and the time of medical personnel.

LOUIS S. REED, Ph.D., has been appointed Health Economist with the Occupational Health Program, Public Health Service, U.S. Department of Health, Education, and Welfare, Washington, D.C. He will make studies of employee health insurance plans and medical care programs for industrial workers, incidence of worker illness and disability, and variations in morbidity and disability among occupational groups. DR. REED has been associated with the field of health economics and prepayment health plans for over 25 years. He received his A.B. from Amherst College and his Ph.D., in economics, from Columbia University. After several years of teaching, he joined the staff of the Committee on the Costs of Medical Care, the pioneer organization in this country in the study of social and economic aspects of medical care, and wrote several of its research reports. He joined the Public Health Service in 1939. His work has been concerned primarily with research and studies in the field of health economics, the financing of health services and prepayment plans. In 1944-47 he made a nationwide survey of Blue Cross and related medical service plans. During the past nine months, while on leave of absence from the Public Health Service, he has been Research Director for the Senate Subcommittee on Welfare and Pension Funds in its study of employee benefit plans and welfare funds. He is the author of numerous books and articles on health economics.

MRS. MABELLE J. MARKEE has been appointed Industrial Nursing Consultant for the Occupational Health Program of the Public Health Service, U.S. Department of Health, Education, and Welfare. She succeeds MRS. ELEANOR C. BAILEY, who has left the Service to be married. MRS. MARKEE will be responsible for assisting state and local health agencies, universities, and other interested organizations in the promotion and development of industrial nursing services. At the time of her appointment in the Public Health Service in 1945, MRS. MARKEE was assigned to the industrial hygiene program. Most recently she has served as Regional Nursing Consultant, with the Department's Regional Office, Chicago. Prior to her appointment in the Public Health Service, she had extensive experience in state and local health department activities, in generalized and industrial nursing programs. She graduated B.A. from Upper Iowa University, and after several years of public school teaching took her professional training at the University of Nebraska School of Nursing. She received a Master of Science in Public Health from the University of Michigan in 1942. She is a member of American Public Health Association, American Nurses' Association, National League for Nursing, American Association of Industrial Nurses, American Conference of Governmental Industrial Hygienists, American Red Cross, and University of Nebraska School of Nursing Alumnae Association.

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Its invisible water-repellent film of silicone helps exclude contact-irritants and conserves natural oils of the skin, while mild keratolytic action softens rough surface layers and glyoxyl diureide promotes healing. Itching, burning discomfort is quickly relieved by small amounts of camphor and menthol, and risk of secondary infection is reduced by the bactericidal action of hexachlorophene.

In a clinical study LeVan and associates obtained complete or partial recovery in over 95% of 147 patients with dermatitis of the hands treated by Silicare. Healing occurred in many cases despite continued contact with the same irritants that incited the dermatitis.

The practical value of Silicare is enhanced by its smooth consistency, pleasing fragrance, and non-greasy, non-sticking properties. In contrast to "barrier creams", Silicare leaves no visible film or coating to impair manual dexterity . . . instead it imparts a soft, smooth "natural" feeling to the hands.

In most cases you will note that absenteeism is reduced, and that changes in workers' assignments are minimized. Why not try it in your next dozen or so cases?

PROTECTIVE EMOLLIENT AID TO HEALING

*Send for reprint—LeVan, P., Sternberg, T. H. & Newcomer, V. D.: California Medicine 81:210, 1954.

Revlon

PHARMACAL DIVISION • 745 Fifth Avenue • New York 22, N. Y.

1956, at the IMA Annual Meeting in Philadelphia. The Texas group held a meeting of its own April 6, 1956 at the Adolphus Hotel, Dallas. The scientific session heard three papers: "Problems of Low Back Pain"—PAUL WILLIAMS, M.D., Dallas; "Occupational Dermatoses"—EVERETT FOX, M.D., Dallas; "Management and Rehabilitation of Various Cardiac Disorders"—A. W. HARRIS, M.D., Dallas. ROBERT POTTS, M.D., was Chairman of this session. V. M. PAYNE, JR., M.D., presided at the Luncheon Meeting, which was addressed by M. O. ROUSE, M.D., President-Elect of the Texas Medical Association. DR. ROUSE was complimentary to the new organization and its efforts; spoke on certain dangers in the proposed extension of Social Security; and stated that a Council on Industrial Health would be a permanent Committee of the Texas Medical Association. At the business meeting, the following officers were elected: President, V. C. BAIRD, M.D.; President-Elect, ROBERT POTTS, M.D.; Vice-President, W. H. HAMRICK, M.D.; Secretary-Treasurer, ROBERT A. WISE, M.D.; member of the Executive Board for a term of three years, E. E. BADEN, M.D. DR. BAIRD called attention to the Ninth Industrial Health Convention to be held in Houston this fall; stated that members of the Academy of General Practice were to participate in this meeting; mentioned several state meetings which reflect the growing importance of industrial medicine and surgery in Texas; made note of the work of DR. CARL NAU in Galveston; and indicated that a poison center as a source of information on toxicology could well be a project of the TEXAS INDUSTRIAL MEDICAL ASSOCIATION. This new group already has 65 members.

FRANK H. HERRINGTON, M.D., Director of Medical Education of Grant Hospital, Columbus, Ohio, was named on May 11 as the City's first full-time Chief Physician. He was appointed by the Columbus Board of Industrial Relations, to supervise the recently established occupational health service for municipal employees. On June 1, he will take over the duties of the position from JAMES P. HUGHES, M.D., of the Department of Preventive Medicine, Ohio State University, who set up the program. DR. HERRINGTON is a graduate of Middlebury College in Vermont and of New York University Medical School. He was a Navy Medical Officer to the U.S. Embassy in Chungking from 1943 to 1945, and remained in China with the Medical Division of U.N.R.A.A. until 1947. Following postgraduate study in London, he served as Industrial Medical Officer for the Asiatic Petroleum Company in Iraq and Syria. He joined Grant Hospital staff in 1954.

Deaths

ARMAS MANNING, M.D., at Los Angeles, April 23, 1956. DR. MANNING was identified full time with the Medical Department of Pacific Telephone and Telegraph Company, Los Angeles, 1943-45, and from September, 1947, until recently. He was a member of IMA through WESTERN INDUSTRIAL MEDICAL ASSOCIATION, which, in his memory, has made a contribution to Occupational Health Institute.

NATHAN SMITH DAVIS, III, M.D., 66, at Chicago, April 20, 1956. DR. DAVIS was a noted specialist in internal medicine; had been President of Chicago Academy of Sciences since 1938; was Chicago Medical Society's President in 1939-40. He joined the Northwestern University Medical School Faculty in 1921, and was Professor Emeritus at the time of his death. For a number of years he had been an interested and cooperative Associate Editor of *Industrial Medicine and Surgery*. His father, NATHAN SMITH DAVIS, II, was Dean of Northwestern Medical School, and his paternal grandfather, the first to bear the name, was one of the founders of the American Medical Association.

Texas Industrial Medical Association—Luncheon Meeting.

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It has also become the choice of many physicians for *therapeutic interruption of nerve function by temporary nerve blocks* in herpes zoster, subdeltoid bursitis, fibrositis, myalgia of shoulder muscles, periarthritis due to trauma, and painful postoperative scars. The relief of pain in these conditions at times appears to be the most important part of treatment.

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Xylocaine HCl Solutions are available in 2 cc. ampuls, 20 cc. and 50 cc. vials in strengths of 0.5%, 1% and 2%, with or without epinephrine.

Bibliography of approximately 300 Xylocaine references upon request.

*Southworth, J. L., and Dabbs, C. H.: Xylocaine: a superior agent for conduction anesthesia, Anesth. & Analg. *32*:159 (May-June) 1953.

Astra Pharmaceutical Products, Inc., Worcester 6, Mass.

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Insert valve of medication vial snugly into Adapter.

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Package is conveniently carried in pocket or purse. Inconspicuous, notably safe, dependable.

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a) Unbreakable Adapter
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Simple to administer to children. Uniform dose, no spilling, no glass to break.

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One or two applications abort most attacks. Rarely is more required.

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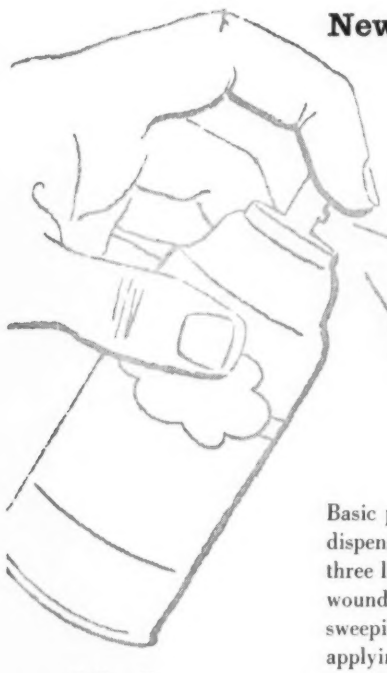
ANOTHER RIKER FIRST



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plastic spray-on dressing[2,3,4]

Basic procedure in applying Aeroplast is simple. With the dispenser held about ten inches away from the lesion, two or three light coats are sprayed directly onto the aseptic dry wound and adjacent skin area. Each coat is sprayed on in one sweeping stroke, then allowed to dry thirty seconds before applying the next.

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Cost of Aeroplast dressing as applied is about ½ cent per square inch. For example, cost of dressing one 10 inch incision is approximately 20 cents. In most wounds, the initial dressing is sufficient until time to remove sutures.[2,3] Aeroplast is STERILE.

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Laparotomies, thoracotomies, herniorrhaphies, mastectomies, ileostomies, colostomies, pilonidal cysts, skin graft donor and recipient sites, severe excoriation . . . all offer opportunities for use of Aeroplast as the primary and definitive dressing.

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For minor burns, abrasions, lacerations, superficial scalp wounds, or to dress almost any hard-to-bandage site, Aeroplast has the advantage of being washable, inexpensive, and not cumbersome.

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Whether the injury is from trauma, burn, excoriation, or minor surgery—Aeroplast protects from dirt and bacteria, is washable and flexible, and may help shorten off-the-job time. Patients appreciate its convenience.

1. Vibesate (Aeroplast), New and Nonofficial Remedies, 1955, p. 541.
2. Choy, D.S.J.: A.M.A. Arch. Surg. 68:33 (Jan.) 1954.
3. Rigler, S. P., and Adams, W. E.: Surgery 36:792 (Oct.) 1954.
4. Wexler, D. J., Bromberg, F., Rakieten, M. L., and Ryan, B. J.: Am. J. Surg. In Press.

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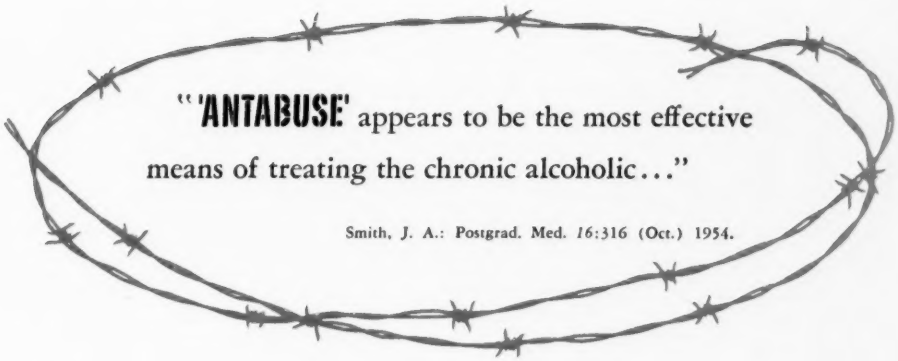

A "CHEMICAL FENCE" FOR THE ALCOHOLIC. "Antabuse" helps the alcoholic resist his compulsive craving for alcohol, and enables him "to respond more readily to measures aimed at the correction of underlying personality disorders." Bone, J. A.: J. Nat. M. A. 46:245 (July) 1954.

"Antabuse"® brand of DISULFIRAM (tetraethylthiuram disulfide) is supplied in 0.5 Gm. tablets, bottles of 50 and 1,000.

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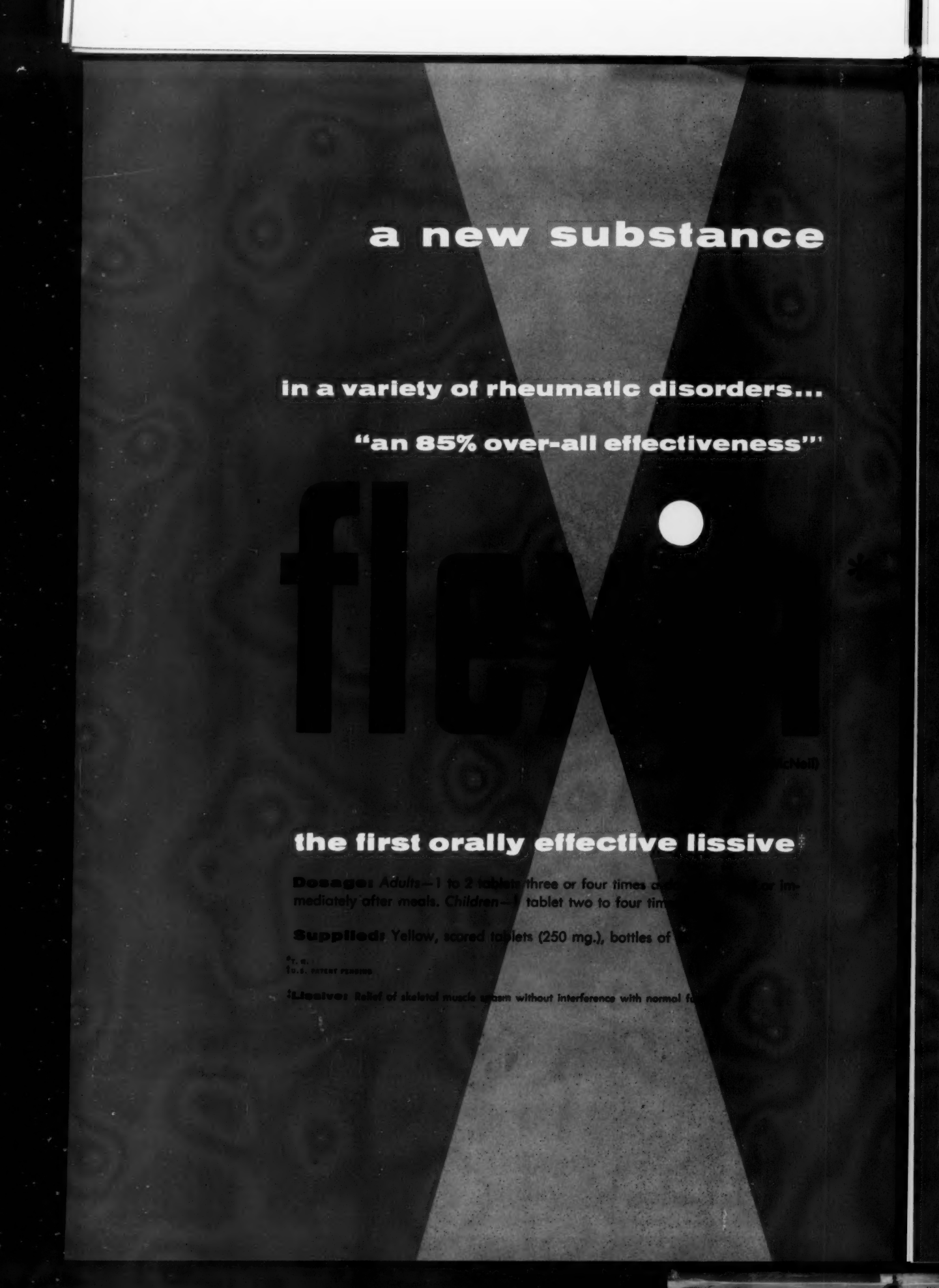
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in a variety of rheumatic disorders...
"an 85% over-all effectiveness"[1]
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the first orally effective lissive†
Dosage: Adults—1 to 2 tablets three or four times
mediately after meals. Children—
tablet two to four tim
Supplied: Yellow, scored tablets (250 mg.), bottles of
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†Lissive: Relief of skeletal muscle spasm without interference with normal

for true spasmolysis
of skeletal muscle

McNEIL

Clinical evidence[1, 2, 3] indicates that to augment the therapeutic advantages of Prednisone and Prednisolone, antacids should be routinely co-administered

A Multiple Compressed Tablet of 'CO-DELTRA' or 'CO-HYDELTRA' is specifically designed as a "tablet within a tablet" to provide stability and to release in sequence, antacid and anti-inflammatory agents . . .

1. the outer layer of antacids comes in contact with the gastric mucosa first . . . and after it is completely dissolved . . .

2. the hitherto intact inner core containing the steroid then begins to release its full therapeutic potential and not before.

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All the benefits of prednisone and prednisolone:

1. less sodium and water retention.
2. marked anti-inflammatory activity at low dosage.
3. prompt response even in patients refractory to other steroids.

PLUS

A. positive antacid action to minimize gastric distress.

B. full potency and stability.

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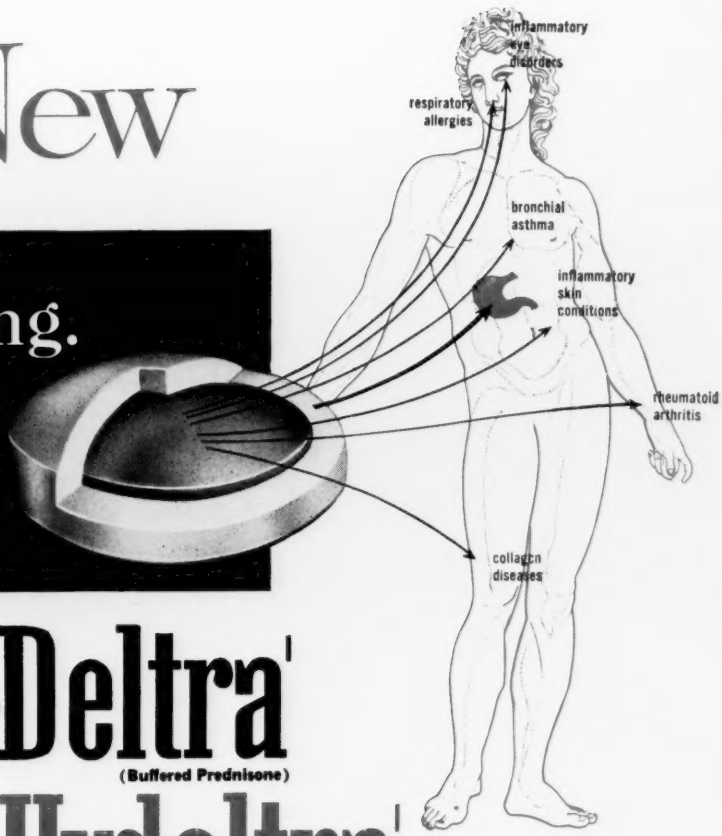
References: 1. Boland, E. W., *J.A.M.A.* **160**:613, February 25, 1956. 2. Margolis, H. M., *et al. J.A.M.A.* **158**:454, June 11, 1955. 3. Bollet, A. J., *et al. J.A.M.A.* **158**:459, June 11, 1955.

New

2.5 mg.

Multiple Compressed Tablets



'Co-Deltra'

(Buffered Prednisone)

'Co-Hydeltra'

(Buffered Prednisolone)

increase the flexibility of therapy with the "predni-steroids"

All *the benefits of prednisone and prednisolone* plus *greater antacid-to-steroid ratio to minimize gastric distress during maintenance therapy.*

The new 2.5 mg. tablets of 'CO-DELTRA' and 'CO-HYDELTRA' together with the 5 mg. tablets give the physician more latitude for precise adjustment of dosage to the individual patient's needs. Cost for either strength tablet is substantially the same as for the steroid alone and in addition the multiple compressed tablets assure routine co-administration of both antacid and steroid components..

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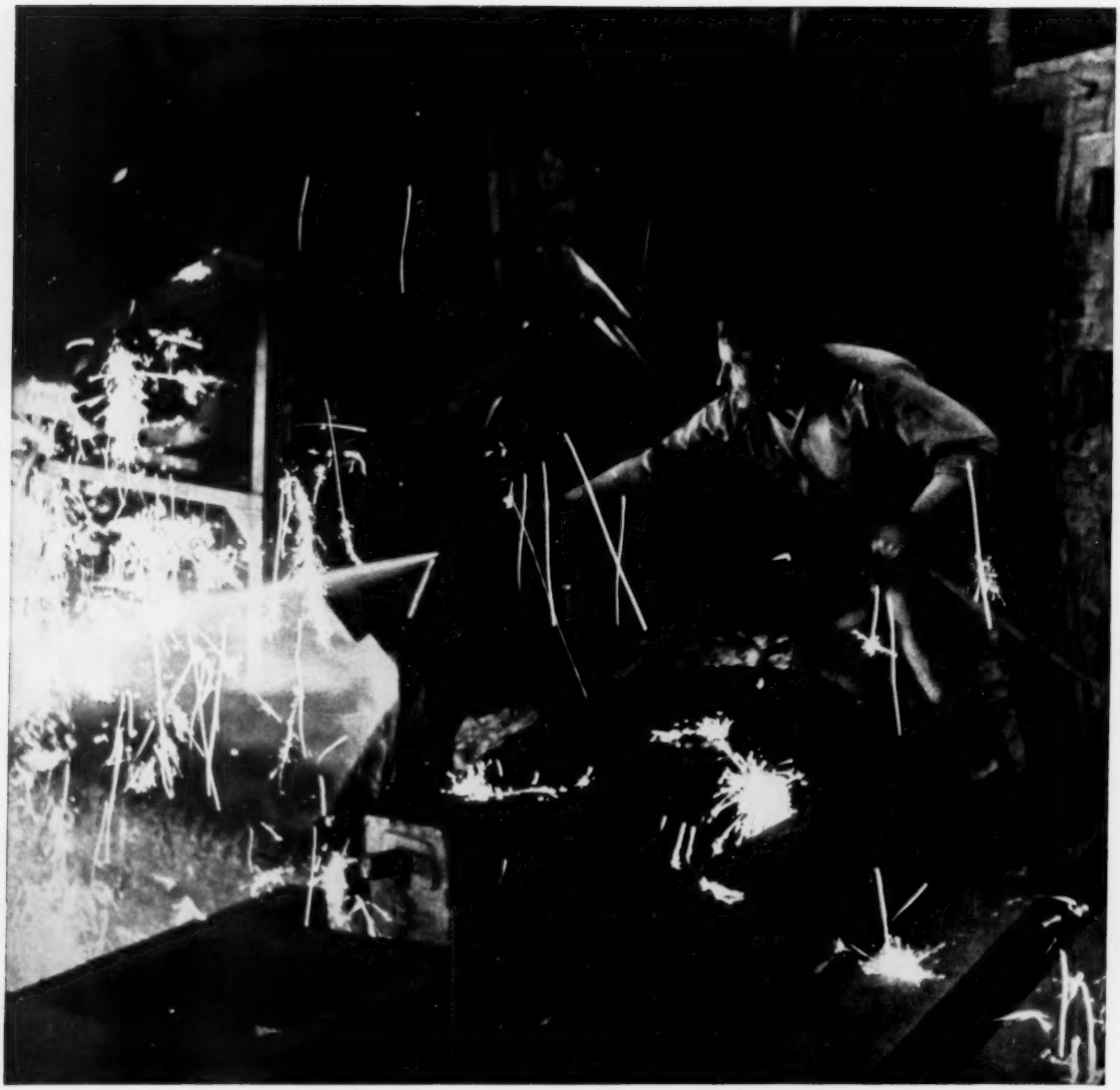

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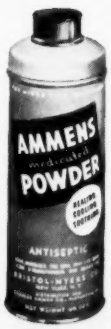
Burning and itching of the skin are common in overheated job environments or in hot weather. Rubbing of sweaty clothes is an additional irritant. Chafing often becomes stubbornly chronic, especially in the obese. AMMENS MEDICATED POWDER gives mechanical "slippage" and healing medication for the sting of chafing.

AMMENS' finely triturated talc and starch absorb moisture, soothe and heal heat rash, prickly heat or diaper rash. Oxyquinolin and zinc oxide help prevent bacterial invasion of macerated crevices.

AMMENS is also excellent for the scrupulous care and hygiene of the feet which are so important to the diabetic patient.



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results are obtained with STERANE[1]—3 to 5 times more active than hydrocortisone or cortisone.

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capacity is greatly enhanced. "Relief of symptoms is more complete and maintained for longer periods with relatively small doses."[2]

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in bronchial asthma

Sterane®

brand of prednisolone

Supplied: White, 5 mg. oral tablets, bottles of 20 and 100. Pink, 1 mg. oral tablets, bottles of 100. Both deep-scored.

1. Johnston, T. G., and Cazort, A. G.: J. Allergy 27:90, 1956. 2. Schwartz, E.: New York J. Med. 56:570, 1956. 3. Schiller, I. W., et al.: J. Allergy 27:96, 1956.

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with Meti-steroid

effectiveness in allergic

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Meti-Derm cream 0.5%

with METICORTELONE, original brand of prednisolone

- *approximately*

twice the per milligram

anti-inflammatory activity

of topical hydrocortisone

- *cosmetically acceptable*
- *water-washable*

for effective local relief of allergic (atopic and contact) dermatoses, nonspecific anogenital pruritus.

formula: Each gram of water-washable METI-DERM Cream contains 5 mg. (0.5%) of prednisolone, free alcohol, in a cosmetically acceptable base.

packaging: METI-DERM Cream, 0.5%, 10 Gm. tube.

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METICORTELONE,™ brand of prednisolone.
*T.M.

...and adding dual control

to Meti-steroid skin therapy—

protection

against infection

new

Meti-Derm ointment

with Neomycin

enhanced effectiveness

in allergic, inflammatory

dermatoses when

minor infection

is present

or anticipated

neomycin in addition to prednisolone, free alcohol
—for protective coverage against virtually all pathogenic skin bacteria with a well-tolerated, *topical* antibiotic.

formula: Each gram of water-washable METI-DERM Ointment with Neomycin contains 5 mg. (0.5%) prednisolone, and 5 mg. (0.5%) neomycin sulfate equivalent to 3.5 mg. neomycin base.

packaging: METI-DERM Ointment with Neomycin, 10 Gm. tube.

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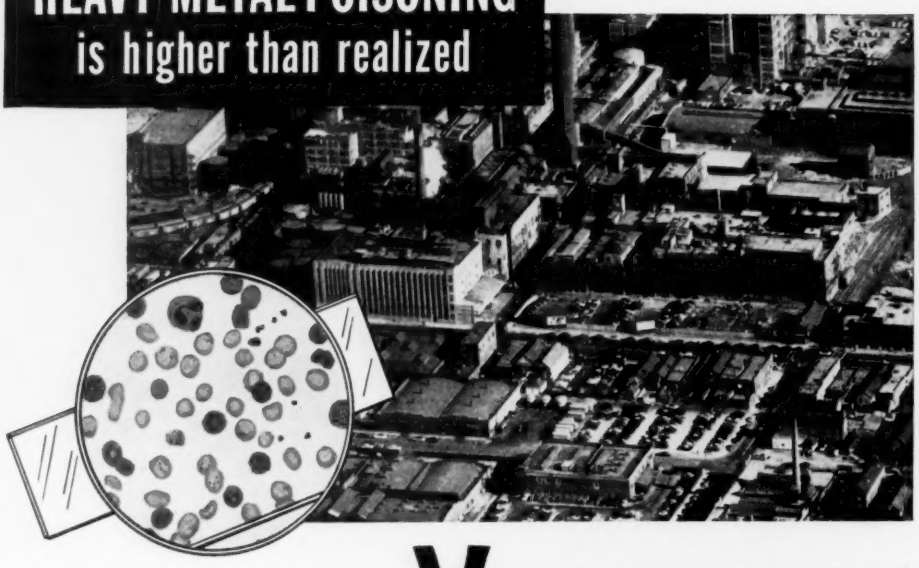
the incidence of HEAVY METAL POISONING is higher than realized



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At last, here is a dependably effective means of removing heavy metals from the body *without danger of organ damage.* Calcium Disodium VERSENATE is now available for oral as well as intravenous therapy; the intravenous form for safe, effective, dramatic short-term treatment; the oral form for convenient prevention of exacerbations or as sole therapy for milder types of lead poisoning.

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INTRAVENOUS Complete instructions for dilution and administration accompany the ampuls. The average daily dose for an adult is 1 to 2 Gm. per day, given as two infusions. For children, the dose is not more than 0.5 Gm. per 35 pounds of body weight, given once or twice daily. Boxes of six 5cc. (1 Gm.) ampuls.

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Write for descriptive booklet.

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"Prompt healing without infection resulted in all traumatic lesions treated"*

". . . Furacin is an effective antibacterial drug which may be safely prescribed for a variety of conditions involving the external eye and lids."

[*BRENNAN, J.W.: AM. J. OPHTH. 35:1343, 1952.]

- rapid, effective antibacterial action against a wide variety of gram-negative and gram-positive organisms with unique lack of irritation
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For infections of the nose and ear:

FURACIN nasal – topically effective antibacterial in rhinitis, nasopharyngitis and sinusitis: available in 15 cc. dropper bottles, providing Furacin (brand of nitrofurazone) 0.02% in an isotonic, buffered solution as: FURACIN NASAL WITH EPHEDRINE (with ephedrine•HCl 1%); FURACIN NASAL WITH NEO-SYNEPHRINE† (with phenylephrine•HCl 0.25%).

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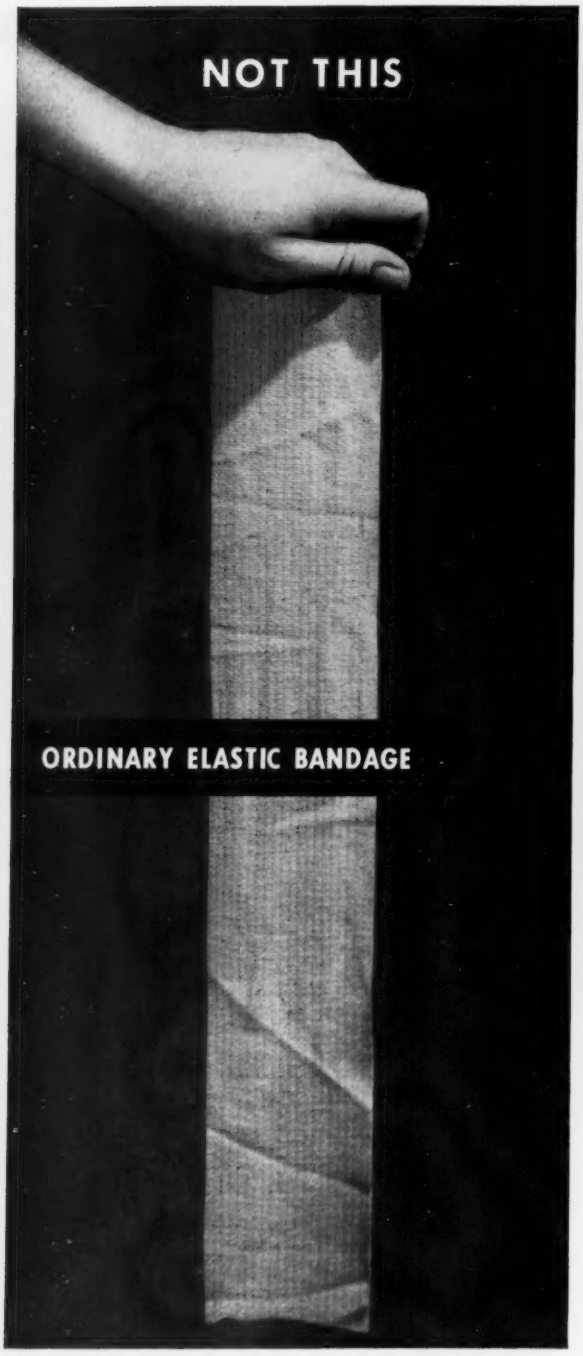
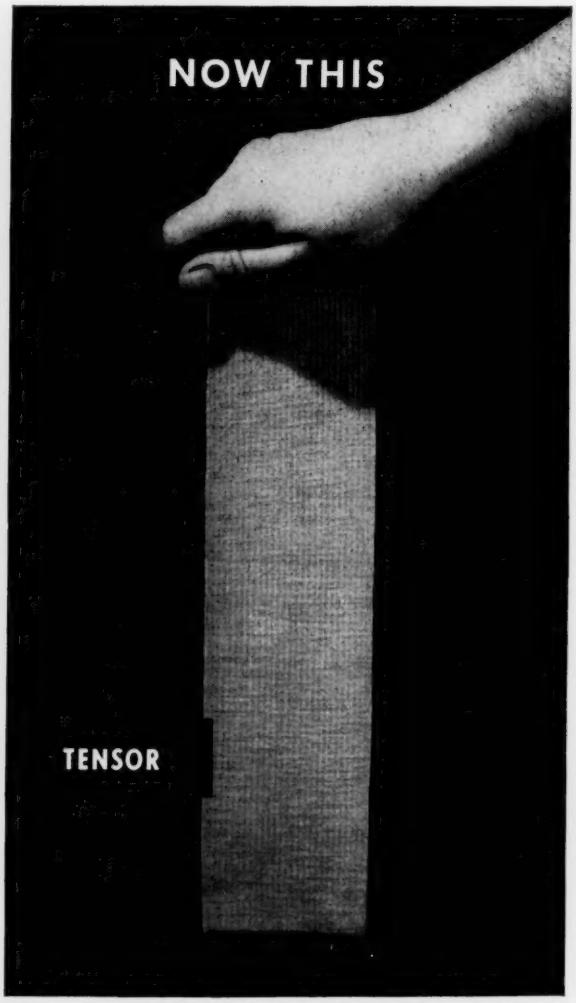
FURACIN OPHTHALMIC LIQUID *(sterile) contains Furacin (brand of nitrofurazone) 0.02% dissolved in an isotonic aqueous solution. Dropper bottle of 15 cc.* FURACIN OPHTHALMIC OINTMENT *contains Furacin (brand of nitrofurazone) 1% in a petrolatum base. 3.5 Gm. tube.*

EATON LABORATORIES, Norwich, N.Y. **NITROFURANS** a new class of antimicrobials neither antibiotics nor sulfas

NEW TENSOR DOESN'T "DIE" IN THE DRYER



Elastic bandage made with ordinary rubber can't stand the heat of the dryer. Rubber threads deteriorate and bandage becomes useless, incapable of giving controlled support. That's because ordinary rubber "dies" in the dryer.



Even after 280°F. heat of the dryer, TENSOR elastic bandage *stays* elastic . . . the only bandage that does so. Unlike bandages made with ordinary rubber, TENSOR will still give proper support *after* repeated heat-drying. TENSOR, you see, is woven with *heat-resistant*, live rubber threads.

NEW **TENSOR®**

ELASTIC BANDAGE

WOVEN WITH HEAT-RESISTANT LIVE RUBBER THREADS

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Division of The Kendall Company
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MUSCLE-RELAXING ACTION

= Equanil*

MEPROBAMATE

(2-methyl-2-*n*-propyl-1,3-propanediol dicarbamate)

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For significant relief in myositis, osteoarthritis, backstrain, and related conditions marked by:

- ***Muscle spasm***
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- ***Restriction of motion***
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As a superior muscle-relaxant, EQUANIL offers predictable action and full effectiveness on oral administration. It does not disturb autonomic function and is relatively free from gastric and other significant side-effects. Its anti-anxiety property provides important correlative value.

Usual dosage: 1 tablet t.i.d. The dose may be adjusted either up or down, according to the clinical response of the patient.

Supplied: Tablets, 400 mg., bottles of 50.

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anti-anxiety factor
with muscle-relaxing action
...relieves tension

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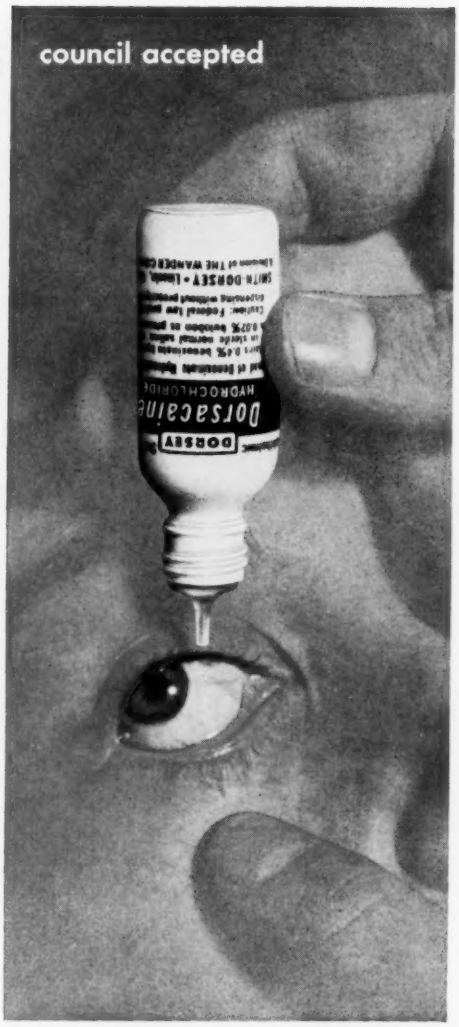

new corneal anesthetic

rapid action and

short duration*

virtually **nonsensitizing**
no cases reported of dermatitis occurring in patient's eye or on hands of physician.

relatively **nonirritating**
does not sting or burn when dropped into the eye—changes in the corneal epithelium or hyperemia of the conjunctiva rarely occur.

Average dose: *for tonometry,* 2 drops. *For minor surgical procedures,* 2 drops instilled 3 times at 90 second intervals.

Supplied: sterile normal saline solution with 0.02% Butoben as preservative, and containing 0.4% Dorsacaine Hydrochloride (benoxinate hydrochloride). In ½ oz. plastic squeeze bottle with dropper tip which delivers uniform drops (approximately 45 drops per cc.).

*Schlegel, H. E., Jr., and Swan, K. C.: A. M. A. Arch. Ophth. *51*:663 (May) 1954.

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Introducing

A.P.C. WITH Demerol® Tablets

for more efficient

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Each tablet contains:		
Aspirin	**200 mg.**	**(3 grains)**
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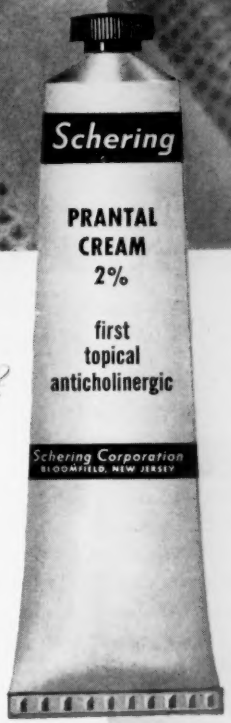

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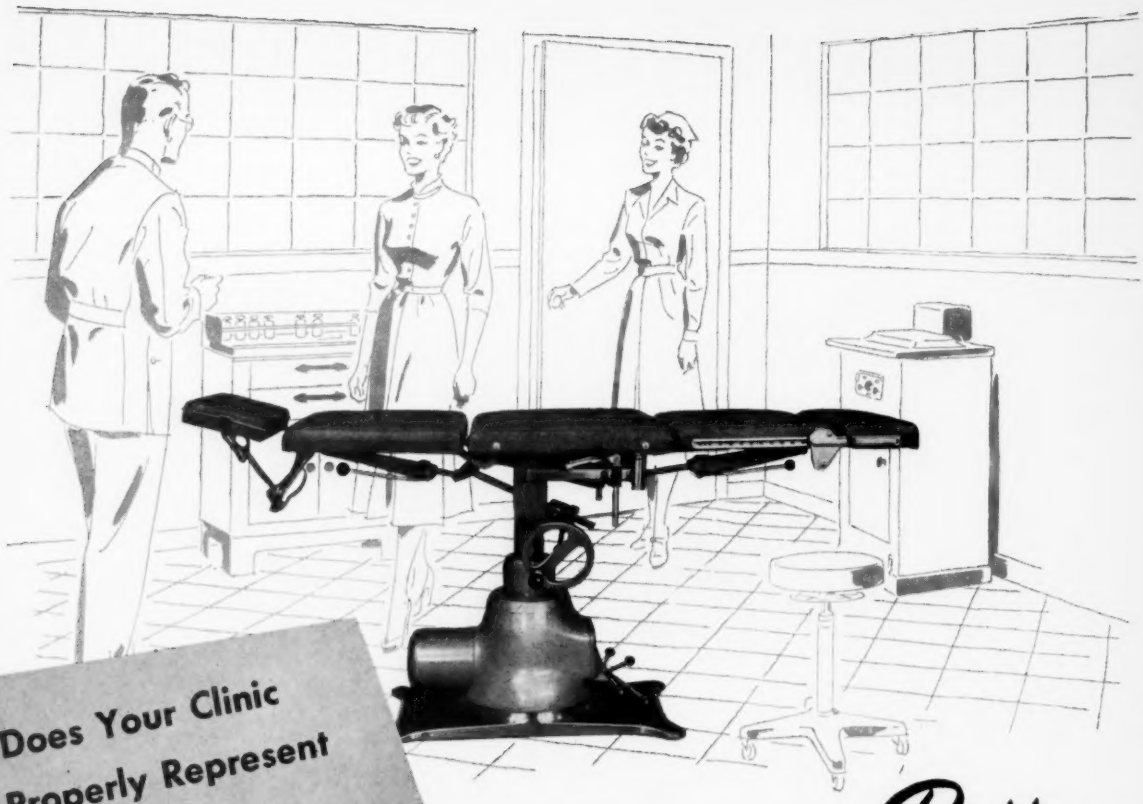

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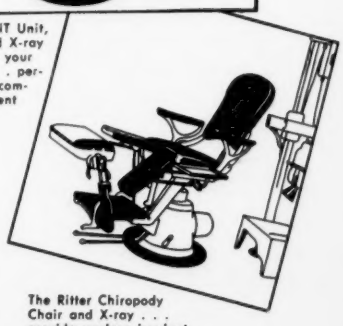

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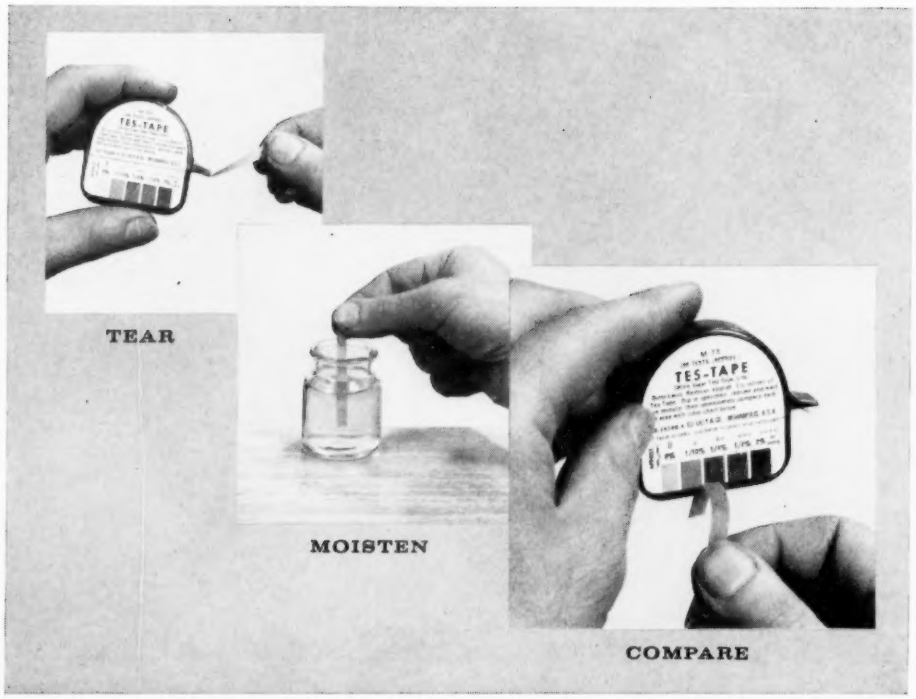

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INDUSTRIAL MEDICINE AND SURGERY
JUNE, 1956

Emotional Problems in Convalescence

C. KNIGHT ALDRICH, M.D., Professor and Chairman
Department of Psychiatry, University of Chicago School of Medicine

CONVALESCENCE prolonged by emotional factors is a serious problem to industry—medically, legally, financially, and from the point of view of reduced efficiency within the industry—not to mention the trouble it causes the patient and the patient's family. Foreshortened convalescence may be a problem as well, particularly when it results in further disability through a too rapid return of the patient to work. I shall explore briefly the nature of these problems, their development, and their diagnosis, and perhaps make a few suggestions of practical help to industrial physicians in overcoming or preventing them.

The Meaning of Illness

THE FIRST STEP in the study of emotional aspects of convalescence is to look at illness as an event in the emotional life of the individual. When we do so, we are struck with the fact that illness, to a degree comparable to the disability it imposes, constitutes a return to helplessness and dependency, to a state resembling that of the helpless and dependent infant. What happens to the patient who is thus forced by circumstances to relive, as it were, part of his infantile experiences? Does he feel more comfortable in this situation than he feels when functioning as an adult? Does he behave as if he were governed by unconscious impulses which say, in effect, "Good, now I can let others take care of me; I no longer must cope with adult problems which frighten me or make me feel uneasy and unsure of myself"? Or is he frightened or ashamed at his helplessness? Is his behavior determined by unconscious fears which warn him: "This is a terrible situation; what will happen to me if I can't take care of myself; what will people think of me, letting myself be babied this way?" If he feels more comfortable (or less uncomfortable) as an invalid than when healthy he is likely to prolong his invalidism without conscious realization that he is doing so. Conversely, if he feels frightened or ashamed of his invalidism he is likely to do whatever he can to shorten it.

The second step in the study of emotional problems of convalescence is, therefore, to determine if we can the reasons for the different attitudes toward helplessness. Where do they originate? This problem has interested psychiatrists for some time; as far as we can tell the attitudes toward helplessness are not to any appreciable extent inborn, but rather represent conditioned carryovers from experiences in the earliest years of life, experiences which are determined by parental attitudes and, although forgotten or "repressed," continue to affect his adaptation to adult life situations.

Patterns in Prolonged Convalescence

TO ILLUSTRATE, there are two general varieties of parental attitudes encountered in early years which tend to condition a patient not to want to leave a protected environment. These are:

1. *Overprotection,* usually by the mother. Overprotection does not result from giving a child too much *love;* you can not give a child too much love, but you can give him too much protection. Too much protection is often given by a parent who is very apprehensive about the presumed dangers of growing up; consequently, the small child never gets a chance to develop confidence that he can make a go of it. There are many reasons for such an attitude on the mother's part, reasons which time does not permit us to explore today. But whatever the cause, an overprotective attitude on the parent's part gives a child the feeling that it is safer to stay home than to go to school or out to play. Although consciously he appears to overcome his insecurity as he grows up, when the conditions of childhood are recreated later in illness, his unconscious feelings indicate that it is safer to stay in bed or in the hospital than to go back to work.

2. *Not enough love* may produce the same type of reaction as overprotection; there is much evidence showing that the child, particularly in his earliest years before he can fend for himself, needs a great deal of love in order to feel secure and safe enough to step out on his own and enjoy independent activity. The child who does not receive enough love may continue throughout his life trying to fill the gap. Again he is not conscious of this inner search, but he looks for and

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holds on to situations in which he can force or maneuver or cajole others to give him at least an approximation of the love he felt cheated of in earlier years.

Thus, overprotection and not enough love early in life may contribute to the prolongation of convalescence following adult illness.

Patterns in Foreshortened Convalescence

THERE ARE also two developmental patterns which result in avoidance of dependent situations. These are:

1. Another group of people who have not received enough love as children but who seem to be independent, in fact extremely independent. Instead of continually seeking dependency, they run away from it, but they do not appear to enjoy the independence they seek so assiduously. They work too hard at being independent, and they evade dependency as if it were a threat to their existence. These individuals are frightened by helplessness. They act as if they felt: "I can't trust anyone to love me enough to care for me, so if I ever let myself get into the same helpless situation I was in as an infant, my goose is cooked." They are the people who don't take care of their colds in the head, and who don't bother to report minor injuries. If for some reason they are forced to be in the hospital, they toss and turn in their beds all day and night, and their anxiety produces more activity than they would produce at work. People of this kind seem somewhat inclined to develop peptic ulcer, and present a familiar problem in therapeutic management; they follow a regime just long enough to relieve their most severe symptoms, but drop it as soon as they begin to feel better. Although on the surface their reaction to dependency appears to be opposite to that of the patient who clings to his symptoms and his illness, beneath the surface the two have much in common. If for some reason the patient who resists dependency no longer can fight off his underlying, frightening helplessness, he may collapse completely into inertia or hypochondriasis, or show other signs of his need to be cared for.

2. The patient ashamed of his helplessness usually has a history somewhat opposite to that of the overprotected child. Instead of prolonging his dependency, his parents (and here the father often plays a major role) pushed him prematurely into independent activity. Although his parents may have given him lots of love, it usually was love conditioned on his being Daddy's big boy, and not a cry-baby. He learned very early and very thoroughly to be ashamed of his helplessness, so that he never lets anyone including himself think he isn't able to take care of himself, sick or healthy. Back he goes to work, therefore, before he is ready.

Including more mature patients (whom we haven't yet mentioned) who can accept the dependency of illness when it is necessary but are eager to give it up when they no longer need it, we can distinguish five categories of convalescent patients. The others include: patients who remain helpless because they are scared to go ahead; patients who remain helpless as they try to capture what they didn't get as children; patients who avoid help because they are afraid of dependency; and patients who avoid help because they are ashamed to accept it.

Presumably, if the physician knew in advance in which group his patient fell he might be better equipped to manage the illness. He should make a diagnosis of the patient's attitude towards dependency, as well as a diagnosis of the patient's illness.

Diagnosis of Attitude

THE DIAGNOSIS of attitude is difficult, however, because the patient is not aware of the feelings producing the attitude. The diagnosis includes an assessment of the patient's current emotional patterns, and a history of his experiences in dependent situations. There is no laboratory test to provide this information; it can only be obtained through the physician's observation and the opportunities he gives the patient to talk about himself during the interview he conducts in taking a history. Allowing the patient to talk about himself requires time but not necessarily a great deal of time—if he has the understanding of personality every physician should have, plus experience and above all interest in the patient as well as in the disease, he can learn a great deal in a short time. Leading, relatively general questions give him the information he needs. Thus, as he explores the patient's past history of illness, he might ask:

"How do you usually adjust to being ill?"

As he secures information about the patient's work history, he might ask:

"How do you spend your weekends and vacations?" "How did you react to your last promotion?" "Will you tell me something about your boss?"

When he is checking on the family medical history, he might ask:

"Would you tell me something about your parents?"

Questions of this type give the physician plenty of opportunities to read between the lines of the answers and determine his patient's position with respect to dependency. He can then with some degree of accuracy predict his patient's approach to convalescence, and adapt his treatment attitude accordingly.

Treatment

FOR EXAMPLE, if he has reason to suspect that his patient is likely to remain helpless because he is scared to go ahead, the physician can see to it that he and his team give the patient plenty of warranted reassurance and firm encouragement to keep on progressing. If he finds evidence that the patient is trying to make up for lost dependent opportunities, he can discourage excessive regression to helplessness. This does not mean that the physician should be curt or unsympathetic, but he can set realistic limits to the secondary advantages of the patient's illness. To

do so may require work with oversolicitous family members; or it may require planning and discussion with the nursing staff. If the patient is afraid of dependency, the physician should be careful to keep his patient informed about medical procedures; if the patient is ashamed of his helplessness the physician can work out ways of helping his patient help himself as much as possible.

In his treatment of patients convalescing from physical illness the physician tries to *balance or counteract* the patient's dependency problems rather than to eliminate them—to work *within* the patient's personality structure rather than to try to alter it. These efforts belong definitely within the province of the family or industrial physician, and their application will in the long run bring benefits to him, to his patients, and to his company.

Summary

EMOTIONAL problems of convalescence, either prolonged or shortened, stem from unsolved dependency problems which revert to early childhood. The application of techniques to determine whether a patient longs for, prefers, fears, or is ashamed of dependency gives the physician an opportunity to take steps to counteract the patient's intrapersonal tendencies toward an unsatisfactory convalescence.

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The Medical Schools

THERE are 81 medical schools. They are located in 57 cities in 37 states, the District of Columbia and Puerto Rico. Forty-one are privately-owned. All but nine are attached to universities. Eleven states have no medical school. Seven new four-year schools are in the offing. The University of Miami School of Medicine will graduate its first full four-year class this spring and become an accredited Class A school. The Albert Einstein College of Medicine, at Yeshiva University in New York, will graduate its first four-year class in 1960. Two-year schools at the Universities of Missouri, Mississippi and West Virginia are in the process of becoming four-year schools. And new four-year schools are planned at the University of Florida and at Seton Hall in New Jersey. By 1960, it is expected, there will be 82 four-year schools and three two-year schools. All 81 today are approved Class A Schools. No other class exists. Seventy-five are four-year schools awarding MD degrees. Six are two-year schools of the basic medical sciences. They award no degree; their students must complete their training elsewhere. The number of graduates has risen from 4,565 in 1930 and 5,136 in 1945, to 6,977 in 1955. By 1960, it is anticipated, graduates will number close to 7,400, keeping pace with the expected growth in population. The 1954-55 enrollment of medical undergraduates in the 81 schools was 28,583, compared to 21,597 in 1930. Approximately 5% are women . . . . Medical education is four times as costly as general university training—chiefly because of the high teacher-student ratio, the close personal supervision and the extensive laboratory and hospital facilities required. Today it costs $12,000 to $15,000 to train a doctor . . . . Medical schools are no longer simply educational institutions. Besides fulfilling their immense training responsibilities they provide 2,300,000 men, women and children with free medical care, valued at $115 million, through associated teaching hospitals and clinics; conduct research projects costing more than $54 million; maintain a steady flow of information about new medical knowledge and techniques; and furnish leadership for thousands of health agencies and organizations. The nation's health and medical structure, of which medical schools are the foundation, is today the most extensive in our history. It consists of: 6,840 hospitals and convalescent homes with a bed capacity of 1,573,014; 209,000 physicians in active practice; 389,000 nurses; 85,500 dentists; 95,000 pharmacists; 78,000 medical and dental technicians; 54,000 workers in public health and related agencies; and 150,000 optometrists, dieticians, physical therapists, hospital administrators and others; 1,330 full-time local health departments serving 1,740 counties with two-thirds of the country's population; 21,000 local and state branches of voluntary health agencies: heart, cancer, TB, polio, arthritis and rheumatism, crippled children, cerebral palsy, and others.

—From *Medical Advance*, April-May, 1956; published by National Fund for Medical Education.

The Effectiveness of Periodical Medical Evaluation

JAMES P. BAKER, M.D., H. CHARLES BALLOU, M.D., EUGENE J. MORHOUS, M.D.
EDGAR L. CRUMPACKER, M.D., and STUART T. BRAY, M.D.
Greenbrier Clinic, White Sulphur Springs, West Virginia

THE GREENBRIER CLINIC opened in July, 1948, with the assurance of financial backing by the Chesapeake & Ohio Railway Company, and with a belief in the value of preventive medicine for individuals. It was something of a gamble, because no such thing had ever been tried. For two years there was little evidence that our venture would succeed, but the future began to look brighter in the fall of 1950. From a skeleton staff in 1948, we have grown to include four internists (a fifth will join us next month), one full-time and one part-time radiologist, one dentist, several regular specialty consultants, plus about 15 nurses, secretaries and technicians.

The volume of our work is shown in the first two columns of Table I. The second two columns show the number of people who have had one, two, or more examinations.

The majority of our patients might be called executives, because they come for examination under company-supported programs. Table II shows that, of the 1,870 people we examined in 1955, 1,136 were examined at company expense. Among the 734 private examinations were architects, bankers, farmers, lawyers, and others who were self-employed, as well as many wives. The one common denominator was that practically all of them were relatively well and carrying on their usual occupations. They came not because they were sick but because they wanted to preserve health.

Table III shows age and sex distribution on first examinations. When these people have been examined subsequently, their ages have changed; their sex has not.

Does the examinee come voluntarily, involuntarily, or under duress? All of the companies whose men we examine offer these examinations; none prescribe them. Of course, there are degrees of pressure. Practically all of these companies allow examinations at any clinic or by any doctor on their approved lists. We get the majority from some companies, very few from others. To get some idea as to acceptance of such examinations, we asked 10 companies how many men were on their eligible lists in 1955, and how many were examined. Table IV shows that 83.5% took advantage of the opportunity. More than half of the companies cited circumstances that prevented more complete acceptance of their programs.

What percentage of those examined return for subsequent examinations? No one clinic can give an accurate answer to this question. From Table V, showing our experience through 1955, it ap-

Presented as part of the Symposium on "The Effectiveness of Periodic Medical Evaluation in the Maintenance of Health and the Early Detection of Disease," at a Meeting of the Medical Section, INDUSTRIAL MEDICAL ASSOCIATION, at the INDUSTRIAL HEALTH CONFERENCE, Philadelphia, Thursday, April 26, 1956.

TABLE I.
EXAMINATIONS DONE

1948	32	.....	1st	3,780
1949	199	.....	2nd	1,421
1950	390	.....	3rd	892
1951	805	.....	4th	569
1952	1,021	.....	5th	303
1953	1,375	.....	6th	130
1954	1,455	.....	7th	50
1955	1,870	.....	8th	2
	7,147			7,147

TABLE II.
HEALTH EXAMINATIONS—1955

Company Sponsored	1,136
Private	734
Total	1,870

TABLE III.
AGE WHEN FIRST EXAMINED

	Male	Female	Totals
21-30	60	64	124
31-40	442	221	663
41-50	1,019	346	1,365
51-60	905	300	1,205
61-65	246	61	307
66-70	54	24	78
70 plus	26	12	38
	2,752	1,028	3,780

TABLE IV.
ACCEPTANCE HEALTH EXAMINATIONS
10 COMPANIES—1955

Eligible	Examined	%
1,296	1,082	83.5

TABLE V.
PATIENTS RETURNING FOR EXAMINATIONS

	No.	%
1st	3,780	
2nd	1,421	37.6
3rd	892	62.7
4th	569	63.7
5th	303	53.2
6th	130	42.9
7th	50	38.4

pears that there is far-from-complete acceptance of re-examination.

There are some very real reasons why these figures look so bad: (1) a man may have had five examinations elsewhere before he comes to us, but we have to list him as a first examination; (2) after his first examination here a man may go to another clinic the next year, but we could not list him as a repeater; (3) people drop out, as will be shown in Table VII; and (4) many people who are not in company-supported programs feel that they cannot afford complete examinations each year.

We have recently begun to study this matter with the care it deserves. We have not had time to review all our records, but offer in Table VI an example of what we are doing.

In 1950, 127 men from one company came to the Greenbrier Clinic for examination. Figures on this horizontal line show how many of these same men returned in subsequent years. The last figure in each vertical column represents the number of new examinees from that company.

We are trying to learn what happened to each of those men who dropped out along the way. Table VII is an example, showing why we examined, in 1955, only 76 of the original 127 who came from this company in 1950.

The question was asked: What is the extent of the examination, and how is it accomplished? This inquiry was followed by five sub-questions.

I shall start by saying that each patient is assigned to an internist who does the entire examination except for radiological, dental, laboratory, and other ancillary studies. Our routine includes history, physical examination, P-A and lateral chest x-rays, electrocardiogram at rest and after exercise, plus the usual battery of laboratory tests. We have found that routine proctoscopic examination is the most rewarding of any single study. In addition to this routine, we do other x-ray and laboratory studies whenever indicated, and often just to establish base lines for future comparison. To justify the latter attitude, it is not feasible to do every available test on a man each year, particularly if he is free of symptoms. However, it *is* feasible to do a cholecystogram every three or four years to discover silent gall stones, a barium enema some other year on the possibility of finding lesions in the colon beyond reach of the proctoscope, and so on. We have estimated the average patient requires three and one-half hours of the internist's time and three quarters of an hour of the radiologist's time, plus the time of nurses, secretaries and technicians.

What are the results of these examinations? One result, highly gratifying to the patient, is the absence of significant disease. On the other side of the picture, we have made more than 7,000 disease diagnoses in the 7,147 examinations we did in the years 1948-1955. A great many of these are of little importance as regards disability or death, but few are insignificant as regards health and comfort. It would serve no useful purpose to give a tabulation of all these diseases, even if space were available. It does seem desirable, however, to show in Table VII the frequency of some of the more significant and alterable diseases discovered in 7,147 examinations of 3,780 people.

TABLE VI.
EXAMINATIONS FROM ONE COMPANY

1950	1951	1952	1953	1954	1955
127	103	87	84	83	76
	88	66	67	67	62
		40	33	33	29
			30	22	24
				19	15
					28
127	191	193	214	224	234

TABLE VII.
ONE COMPANY

Examined at Greenbrier Clinic 1950	127
Examined at Greenbrier Clinic 1955	76
	51
Regulars unable to return	6
Retired (18 for age)	22
Transferred to other companies	4
Died	8
Ineligible	3
Other clinics	6
Uninterested in program	2
	51

TABLE VIII.
FREQUENT SIGNIFICANT DIAGNOSES ON 3,780 PERSONS

	No.	%
Obesity	1,100	29.1
Hypertensive vascular disease	528	13.9
Anemia, hypochromic or secondary	264	6.9
Polyp of rectum	192	5.1
Polyp of colon	33	.8
Gall stones	158	4.1
Diabetes mellitus	81	2.1

TABLE IX.
EXAMINATION REPORTS—1955

63 Companies To Patient or his doctor		1,136 Patients To Company Copy to Patient
No. of Companies	52	11
No. of Patients	990	146

At the conclusion of an examination, we discuss the results with the patient. Subsequently, we send a complete written report. The majority of these reports go to the patient or his doctor, not to the company. The policy of some companies is to have a copy sent to the Medical Director or some other officer. Table IX shows the distribution in 1955.

It is possible for us to follow up nearly all the patients we examine, even though they come from all sections of the country. Their economic status is such that they do not get lost. Of course, we do not have the advantage of seeing them frequently and carrying out treatment that we think advisable. However, many of these patients come back year after year. Such yearly contacts afford a perspective that is complementary to the more frequent contacts had by the patient's personal physician; the value of this is attested by the amount of correspondence we have with patients and their doctors. Just in case a patient overlooks something he is supposed to do, we keep a "tickler file." When a chart is closed out, we make a note in it that a follow-up letter is to be written on a specified date. We usually get prompt re-

plies that corrective action has been taken or is planned.

Many significant diseases cause no real symptoms over a period of years. Some of them can be detected only by studies outside the usual routine. As an example, we demonstrated gall stones in 158 people of the 3,780 examined. At least half these people had no symptoms suggesting gallbladder disease. We have done cholecystograms on less than half the people we have examined, so can be reasonably sure that others are harboring silent gall stones. There seems to have grown up the belief that any person shown to have gall stones should have a cholecystectomy. We have not heard of any mass surveys to detect gall stones.

The thirty-first question posed to the members of this Symposium was: How does the yield vary on the examinations of individuals subsequent to the initial examination? A complete answer would require several months of preparation and several hours for presentation. An example can be given from a study made by Dr. E. L. Crumpacker, a member of our Staff, on rectal polyps, in Table X. This study was on male patients only, examined through July, 1955, so the figure is smaller than the figure for rectal polyps in Table VIII.

TABLE X.

	No. of Patients Examined	No. of Patients with Polyps
First annual examination	2,401	94 (3.9%)
Second annual examination	1,183	43 (3.6%)
Third annual examination	764	19 (2.5%)
Fourth annual examination	450	10 (2.2%)
Fifth annual examination	225	5 (2.2%)
Sixth annual examination	87	2 (2.3%)
Seventh annual examination	48	1 (2.1%)
Total number of examinations	5,158	161 (6.7% total (patients) (3.1% total (exams.)

It is not my prerogative to sum up the effectiveness of periodic examinations. In closing, I would simply like to point out that their effectiveness could be judged more accurately if all of us adopted a uniform system of recording our findings. The mechanics for such records could be worked out so that a wide variety of data would be available without painstaking search through individual case histories. The sum total of all our experience would be far more valuable than the experience of a single group.

Somewhat Inconsistent

RECOGNIZING the insidious onset of many chronic illnesses, the Commission on Chronic Illness decided to offer a complete free examination at the Johns Hopkins Hospital Clinic to a sample of individuals in the surveyed group. Arrangements were made to provide free transportation both ways, and baby-sitters if necessary to facilitate the mothers' acceptance. The purpose was to detect unrecognized disease, and at the same time to get some cost figures on the operation of such a program. Despite tremendous efforts, only 765 individuals—not more than 60% of those invited—could be persuaded to come to the clinic for a free medical examination. The direct cost of getting these persons in for examinations, excluding medical and supervisory expenses, was $10.16 per person. The interviewers made 3,605 home visits for a total of 2,786 working hours; they traveled 15,812 miles; 1,062 appointments were made at the clinic—including broken appointments. This factual account may come as a shock to some health workers. It does seem somewhat inconsistent. The adult population of this country is supporting its voluntary and official health agencies to a greater extent than ever before, but at the same time is showing relatively little concern for its own health—in terms of following the recommendations of experts. —*Baltimore Health News*, March, 1956.

The Early Detection of Disease by Periodic Examination

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THE MARKED increase in the degenerative diseases, which have become the primary cause of death in our generation, has led to a continuing search for clinical methods to assist in their early detection. These diseases are recognized to have their inception early in life, in the 30's and 40's, and their course is insidious until the fully developed disease produces its symptoms in the 50's and 60's. It is evident that the early detection of disease is the best means of preventing the medical losses from chronic illness. The constructive approach to the prevention of disease is to be found ideally in the regularly scheduled periodic health examination of apparently normal persons who are without symptoms. However, just as important is the fact that a considerable percentage of persons do present themselves at regularly scheduled periodic examination with knowledge of disease or with specific complaints. From the point of view of definition[1] it has been suggested that the term "detection" should be confined to the identification of disease which is not causing symptoms or manifest illness. It should be distinguished from "clinical diagnosis" which is more properly a determination of the nature of disease that is already producing symptoms or illness. However, this differentiation becomes academic in view of the primary purpose of the periodic examination in the maintenance of health.

Administration of the Periodic Examination Program

THE PERIODIC examination program was inaugurated at the Consolidated Edison Company of New York in 1949, and it was established within the framework of the industrial Medical Department as a typical outpatient unit. Participation in the program was on a voluntary basis and was extended to salaried personnel on the monthly payroll. It included mainly men—the less than a dozen women are not listed in this survey—in the age group 40 to 65, ranging from assistant foremen and supervisors to plant superintendents, bureau heads, managers of departments, and the top executive group. The cost was met by a joint contributory plan which amounted to $24 a year to the individual concerned. In a period of seven years, 1949-1955, a total of 707 out of an average of 950 persons who were eligible, availed themselves of the facilities offered. There has been a variability due to normal age and disability retirement and death as well as new participants. Allowing for this the over-all participation in 1955 can be estimated at 68%. It is interesting to note that in the top executive group 90% underwent regular periodic examination.

The periodic examinations are scheduled on an annual basis and appointments are forwarded automatically on a regular monthly plan. Our experience indicates that 90% of those undergoing initial examination returned for annual re-examination. The remainder varied the interval from two to three years, but this group becomes smaller each year and in 1955 it was less than 2%. in those over 55 years of age, approximately 25% have been placed in a test group who have been subjected to a less detailed screening examination in the semiannual interval to determine if this technique will assist in the early detection of malignancy of the lung and prostate, as well as asymptomatic electrocardiographic abnormality. Follow-up examination of those in whom pathological conditions have been detected is also scheduled at regular intervals. Because of the intradepartmental location of the examining unit, unscheduled revisits for acute complaints are common and assisted in the clinical diagnosis of more than 20% of the conditions noted.

The results of the examination are kept confidential and are transmitted only to the individual and his medical adviser. When a situation arises in which the health of the individual might be of concern to management, the individual is advised to discuss the administrative problem with his immediate superior. In a period of seven years, no one has disregarded this recommendation. It was only with the individual's consent and in his interest that the physician has ever made a general recommendation to management. Confidential medical information was never revealed. As a matter of policy, management's interest in the periodic examination was that it was advantageous to the individual, as well as the company, but the examination did not necessarily have to be conducted in the intra-department unit. It recognized that some individuals would prefer to be examined by a physician of their own choice. In this atmosphere the number of examinations has increased year by year, from 35% in 1949 to 68% in 1955.

Presented as part of the Symposium on "The Effectiveness of Periodic Medical Evaluation in the Maintenance of Health and the Early Detection of Disease," at a Meeting of the Medical Section, INDUSTRIAL MEDICAL ASSOCIATION, at the INDUSTRIAL HEALTH CONFERENCE, Philadelphia, Thursday, April 26, 1956.

The unit conducting the examinations consists of an outpatient diagnostic clinic with two consultation and examining rooms and an interposed fluoroscope. The electrocardiograph and ballistocardiograph room is adjacent, and this arrangement allows an easy flow of patients between all parts of the unit. The program is directed by one of the administrative physicians and requires at present the equivalent in time of two full-time doctors, each of whom has a secretary. The peak volume of work occurred in 1955 and consisted of 627 complete examinations (of 920 eligible) and 2400 revisits. Many of the revisits were for unrelated medical problems of an acute nature, but at times this has provided a means of prompt diagnosis of serious medical conditions such as coronary thrombosis and the acute abdomen. Medical and surgical treatment has been largely in the hands of private physicians and hospitals.

Laboratory studies and x-rays are obtained in an outside facility. Special consultations, mainly surgical, are rendered by outside specialists. The intra-departmental location of the examining unit is basically related to the centralized operations of the Consolidated Edison Company in the metropolitan area of New York. It has favored the role of the industrial Medical Department as a part of the management team, but we recognize that periodic examination programs can be administered as well in an outside facility.

The Periodic Examination

THE PERIODIC examination is accomplished by the personalized technique whereby selected laboratory studies and x-ray examinations are undertaken as the result of a clinical opinion based on a careful history and physical examination. The history is detailed, and is taken in its entirety by the physician who personally conducts the examination. We have not used patient questionnaires. In accordance with good medical practice the history reviews family relationships, work environment, habits, and other personal matters. These not only give the physician an understanding of the personality of his patient, but also help the individual to comprehend his own reactions. We doubt if such information could be obtained in examinations undertaken in an involuntary manner.

Our experience has been that the routine periodic examination including history, physical examination, fluoroscopy and health counseling can be done in one session of approximately one hour if a few routine laboratory tests, such as urine, blood serology, sedimentation rate, and an electrocardiogram are accomplished beforehand. At times, routine preliminary laboratory studies will include a blood count, blood cholesterol and uric acid determinations, and a postprandial blood sugar, particularly in those over 50 years of age. These are not accomplished on each annual reexamination, but are staggered over a period of three years. Routine exercise electrocardiogram tests are accomplished on a biennial basis, but in those with precursors of cardiovascular disease they may be rechecked annually. Those individuals whose clinical examination shows a deviation from normal, or whose family history raises the question of metabolic disease or achlorhydria, have a revisit interview after additional laboratory studies, such as blood chemistry, gastric

TABLE I.
PERIODIC HEALTH EXAMINATIONS
1949 - 1955

Age Group	Total Cases	Number of Physical Examinations	Number Without Any Defects	Number With Minor Conditions	Number "Normal"	Number With Major Conditions		
25-29	1	2	0	1	1	0		
30-34	1	3	1	0	1	0		
35-39	12	29	7	4	11	1	Cardiovascular	1
40-44	85	257	37	25	62	23	Cardiovascular	8
							Gastro-intestinal	4
							Metabolic	6
							Miscellaneous	5
45-49	199	540	59	63	122	77	Cardiovascular	29
							Gastro-intestinal	6
							Metabolic	24
							Skeletal	7
							Miscellaneous	11
50-54	199	541	41	50	91	108	Cardiovascular	40
							Gastro-intestinal	19
							Metabolic	23
							Neuropsychiatric	8
							Miscellaneous	18
55-59	119	309	17	24	41	78	Cardiovascular	44
							Gastro-intestinal	7
							Metabolic	15
							Neuropsychiatric	5
							Miscellaneous	7
60-64	90	216	8	20	28	62	Cardiovascular	25
							Gastro-intestinal	11
							Metabolic	15
							Neuropsychiatric	6
							Miscellaneous	5
65-69	1	1	0	0	0	1	Metabolic	1
	707	1898	170(24%)	187(26.5%)	357(50.5%)	350(49.5%)		

analysis or urine indicator resin test (Diagnex), x-ray and stress tests. We have gradually extended the scope of routine proctoscopy from above 55 years to the lower age bracket and have included this in the revisit interview. The revisit interview rarely extends over 20 to 30 minutes and each year has covered approximately one-third of those having a scheduled periodic examination. At the completion of all studies the significance of the findings, even if normal, is discussed. This health counseling is accomplished "first-hand" by the physician who has personally examined the patient.

A time estimate for the detailed periodic examination, including the initial examination, electrocardiogram and exercise test, laboratory studies, and revisit interview can be averaged at one and a half hours for the entire group. An additional hour for laboratory and x-ray studies is added for the employee's time factor. The estimated cost for the detailed periodic examination in this survey has averaged approximately $30 to $35 per case per year. This includes the salaries of the physicians, nurses, clerks and overhead, as well as the cost of electrocardiograms, laboratory studies, proctoscopy, consultations, and indicated x-rays.

Results of the Periodic Examination

OUR EXPERIENCE at Consolidated Edison indicates that the benefits of the periodic examination are tangible. In a period of seven years, approximately 68% of those eligible were examined. As noted previously, this group comprised men, mainly from ages 40 to 65; with more than 85% in the span from 45 to 65 (Table I). About half of these individuals had conditions of major medical significance in themselves or as precursors of potentially serious disease (Fig. 1).

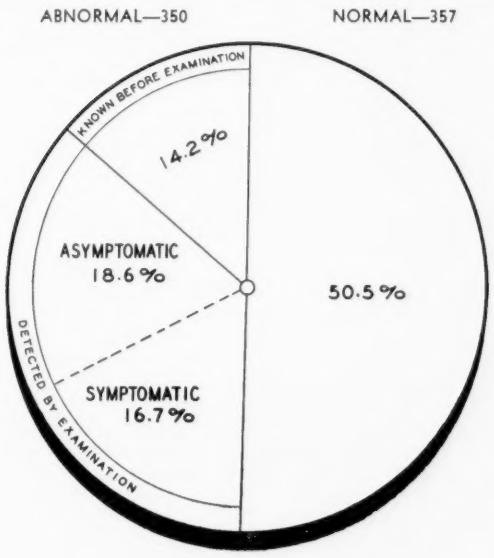

Fig. 1.
Results of periodic examination—final status of 707 cases, 1949-1955.

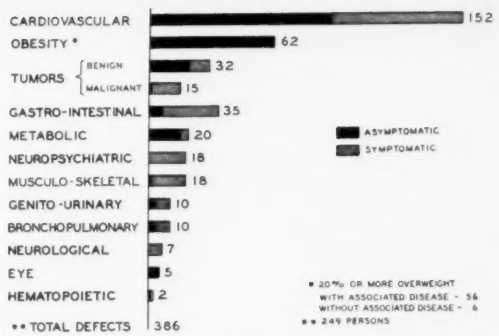

Fig. 2.
Leading diseases detected by periodic examination, 1949-1955.

Approximately 15% of the group knew of certain conditions they wished to have checked by the examining physician, but a sizable number of those examined, in fact 35%, had conditions revealed to them for the first time. This was even more impressive when it was noted that more than half of these conditions were without symptoms of any kind. A summary of the leading diseases detected by periodic examination indicates that the cardiovascular system was most frequently involved (Fig. 2). The details of the diseases detected and the method of diagnosis in both the asymptomatic and symptomatic group are summarized in Table II. It should be noted that there was no difference in the relative health status at comparable ages between top executives and those in lower level positions.

In the first year of the program, 307 persons were examined and significant conditions were present in 50%. Previously unrecognized conditions were detected in more than half of these, or approximately 25% of the group examined. The seven year summary of 707 persons again disclosed that approximately 50% had major medical conditions, but the number of previously unrecognized conditions had risen to 35.3%. Of the major conditions detected, 43% were discovered in the initial examination. The regularly scheduled re-examination materially increased the detection of disease, particularly in the latent or asymptomatic stage (35%). The semi-annual screening examination in a test group above 55 years was effective in the early diagnosis of some asymptomatic electrocardiographic abnormalities, but did not appear to assist in cancer detection. It is interesting to note that unscheduled re-examination for acute complaints was instrumental in the diagnosis of definite disease processes, such as acute coronary thrombosis, acute abdomen and malignant tumors (22%). In other words, follow-up re-examination accounted for more than half of the conditions detected (57%) and gave an opportunity to observe the natural development of disease processes, as well as the response to treatment.

There were only a small number of consultations, approximately 60 per year, referred to outside specialists for confirmation of diagnosis,

mainly surgical conditions and rectal polyps. As noted previously, treatment was largely in the hands of private physicians and hospital facilities. It has been our experience that practically no case disregarded medical advice concerning the necessity for adequate medical or surgical treatment.

Since this group was largely supervisory and managerial in type, there were only rare instances in which a change in actual job assignment was necessary. It confirmed our experience that even persons with severe cardiac involvement rarely get into trouble on the job if they are under adequate medical supervision. It also points out certain pitfalls in making periodic examinations a major issue in promotion or in evaluation of job performance.

Normal age retirement occurred in 9%. The seven-year follow-up (Fig. 3) disclosed that the mortality figure was approximately 5%. In 23 individuals (3%) it was considered advisable to recommend disability retirement. There were an additional 8% whose condition was progressive, but these, along with 31% whose condition remained unchanged, were able to carry on their usual business activities under medical supervision. Further proof of the value of periodic examinations is indicated by the fact that in 20% the conditions noted were entirely corrected, and 33% were improved by treatment.

TABLE II.
MAJOR CONDITIONS DETECTED BY PERIODIC EXAMINATION
1949 - 1955
249 Cases—386 Diagnoses

I. ASYMPTOMATIC 132 Cases—212 Diagnoses	Number Diagnoses	Means of Diagnosis
CARDIOVASCULAR	91	
1. Hypertension and Arteriosclerosis	23	Physical Examination
2. Aortitis, Arteriosclerotic	28	Physical Examination, Fluoroscopy
3. Myocardial Damage	27	Electrocardiogram
4. Miscellaneous—Bundle Block, Aur. Fibrill., Old Coronary Thrombosis	13	Electrocardiogram
OBESITY	62	
1. Associated Disease	56	Laboratory Studies, Electrocardiogram
2. Over 20% Overweight	6	Physical Examination
METABOLIC	16	
1. Diabetes Mellitus	11	Postprandial Urine and Blood Sugar
2. Gouty Diathesis	2	Blood Uric Acid
3. Subthyroid	2	Basal Metabolism
4. Hypercholesteremia and C. V. Disease	1	Blood Cholesterol
TUMORS	22	
Benign 1. Polyps, Rectum	15	Proctoscopy
2. Substernal Thyroid	3	Physical Examination, Fluoroscopy
3. Thyroid Adenoma	3	Physical Examination
Malignant - Lung	1	Physical Examination, Fluoroscopy
GASTRO-INTESTINAL	7	
1. Cirrhosis	4	Physical Examination, Bromsulphalein
2. Cholelithiasis	3	X-ray
EYE	5	
1. Cataract, Glaucoma		Special Examination
2. Iritis		
GENITO-URINARY	3	
1. Nephritis	1	Urine
2. Pyelitis and Stone	2	X-ray
BRONCHOPULMONARY	4	
1. Peribronchial Fibrosis	1	Physical Examination, Fluoroscopy, X-ray
2. Pulm. Fibrosis, Emphysema, Tuberculosis	3	
HEMATOPOIETIC		
Myeloid Metaplasia	1	Blood Count, Bone Marrow Biopsy
MUSCULOSKELETAL	1	
Rheumatoid Arthritis	1	Physical Examination, X-ray
	212	

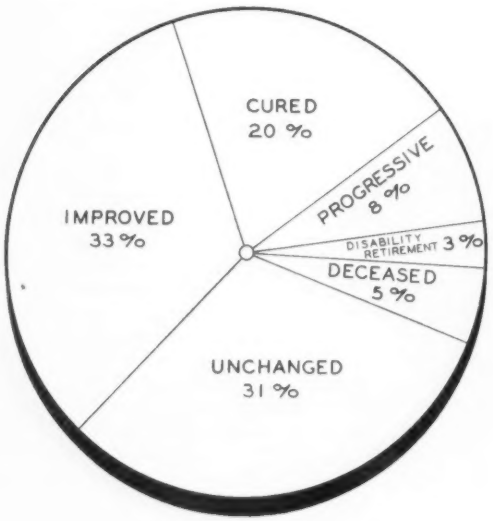

Fig. 3.
Seven-year follow-up of periodic examination.

In evaluating the results of the periodic examination program a most important question that has to be answered is "what techniques result in the greatest payoff in the diagnosis of unrecognized conditions?" It is obvious that in clinical medicine there is a good deal of intermingling of history, physical examination, x-ray and laboratory studies in arriving at a diagnosis. In a general way, the value of each procedure can be listed as follows:

History 34%
Physical Examination 22%
Electrocardiogram 17%
(50% in cardiovascular diseases)
Laboratory 14%
X-ray 10%
Special Procedures 3%

In dealing specifically with the asymptomatic group, the detection of unrecognized conditions was attributable to the physical examination in 60% of the cases and the electrocardiogram,

TABLE II—CONTINUED

II. SYMPTOMATIC 117 Cases—174 Diagnoses	Number Diagnoses	Means of Diagnosis
CARDIOVASCULAR	61	
1. Hypertension and Arteriosclerosis	17	Physical Examination
2. Coronary Thrombosis	26	Electrocardiogram
3. Arteriosclerosis Obliterans	9	Physical Examination
4. Miscellaneous	9	Physical Examination, Electrocardiogram
GASTRO-INTESTINAL	28	
1. Duodenal Ulcer	13	X-ray
2. Gastric Ulcer	3	X-ray
3. Gall-Bladder Disease	8	X-ray
4. Other	4	X-ray
TUMORS	25	
Benign 1. Thyroid Adenoma	1	Physical Examination, X-ray
2. Substernal Thyroid	2	Physical Examination, X-ray
3. Papilloma, Bladder	1	Urine, Cystoscopy
4. Polyp, Rectum	7	Proctoscopy
Malignant—Esophagus, Stomach, Rectum, Pancreas, Kidney, Bladder, Prostate, Larynx, Lung	14	Physical Examination, 'scope, X-ray, Acid Phosphatase
PSYCHIATRIC	18	
1. Anxiety Neurosis	10	
2. Psychoneurosis	8	
MUSCULOSKELETAL	17	
1. Gout	11	Physical Examination, Blood Uric Acid
2. Herniated Disc	2	Physical Examination
3. Arthritis, Rheumatoid & Osteo	3	Physical Examination, X-ray
4. Paget's Disease	1	Physical Examination, X-ray
BRONCHOPULMONARY	7	
1. Emphysema	2	Physical Examination
2. Pneumothorax, Spontaneous	2	Physical Examination, Fluoroscopy
3. Tuberculosis	2	Physical Examination, X-ray
4. Asthmatic Bronchitis	1	Physical Examination
GENITO-URINARY	7	
1. Nephrolithiasis	4	Urine, X-ray
2. Prostate Obstruction	2	Physical Examination
3. Non-functioning Kidney	1	X-ray
NEUROLOGICAL	7	
1. Cerebral Thrombosis	6	Physical Examination
2. Multiple Sclerosis	1	Physical Examination
METABOLIC	4	
1. Diabetes Mellitus	3	Urine, Blood Sugar
2. Hyperthyroidism, masked	1	Basal Metabolism, Protein-Bound Iodine
	174	

x-ray, and laboratory procedures in the remainder. These figures reinforce our conviction that the personalized approach to the periodic examination is a most important factor. Much more is to be gained by careful history and physical examination than a barrage of laboratory studies and x-rays. This is applicable to both the symptomatic and asymptomatic groups. It also indicates the weakness of multi-phasic screening programs which depend largely on laboratory and x-ray procedures.

A critical appraisal of the value of the periodic examination program would not be complete without mentioning the "missed diagnoses," and a review of the limitations of the periodic examination procedure.

The missed diagnoses fall mainly into the cancer group. A gross enlargement of the prostate, even without obstructive symptoms, should be checked by routine blood acid-phosphatase determination and regular re-examination. Cancer of the pancreas remains the most difficult type of abdominal malignancy to diagnose. Colonic cancer above the sigmoid can be missed on routine x-ray study. Early cancer of the rectum in a small polyp can be overlooked by proctoscopy.

Limitations of the Examination

IT IS EVIDENT from the list of major conditions "detected" by periodic examination that most of the diagnoses depended on the presence of well-established disease, even if without symptoms. Notable exceptions were seen in transient hypertension or the development of early hypertension, a positive exercise electrocardiogram test in borderline or non-specific abnormality, glycosuria in early diabetes mellitus, an elevated blood uric acid in gouty diathesis, and the discovery of an asymptomatic rectal polyp on routine proctoscopy. For a truly constructive approach to the prevention of degenerative disease and cancer, improved techniques of examination are necessary for early detection. These should cover three fields at least:

1. Early detection of cardiovascular disease.
2. Investigation of metabolic diseases, such as diabetes, mellitus, gout and hypercholesteremia.
3. Cancer detection.

Cardiovascular Diseases

THE DIAGNOSIS of degenerative cardiovascular disease associated with high blood pressure or angina pectoris and coronary thrombosis is readily established, but the detection of latent coronary disease with normal findings on physical examination, x-ray of the heart and the electrocardiogram is difficult. We have used the double "two-step" exercise electrocardiogram test as a technique to uncover hidden coronary artery disease. We have also utilized the ballistocardiograph. Our results with blood cholesterol determinations have been rather disappointing and are described under metabolic diseases below.

The experience with the double "two-step" exercise electrocardiogram test reveals that in the age group, 40 to 65, one may expect over 10% abnormal responses (positive test) in apparently normal persons. We believe it very significant that follow-up study revealed that approximately 20% of this group of apparently normal persons with a positive exercise test went on to develop myocardial damage on the electrocardiogram or actual coronary thrombosis. On the other hand, in those with a normal response (negative test) less than 2% developed such a vascular complication. This is not the appropriate time to go into the details of the criteria which designate a positive test.[2] Suffice to say that this is usually manifested by an S-T segment depression of one millimeter or over in the limb leads or ¾ milli-

meter in the precordial leads using the P-R junction as the reference point. It has been our experience that changes in T-waves occur mainly in persons with atypical angina or other manifestations of active coronary disease. While the negative double "two-step" test appears to have value in excluding latent coronary artery disease, it does have distinct limitations in the false-negative test. These limitations unfortunately are even more pronounced in those persons with the precursors of arteriosclerotic heart disease such as essential hypertension and arteriosclerosis of the aortic arch. In this group, there were as many as 20% false-negative tests. We have 13 documented cases of coronary thrombosis following within one year of a negative double "two-step" test.

After a six-year experience with the ballistocardiogram[3] (the table ballistocardiograph was used in the last four years) we came to the conclusion that a normal ballistocardiogram in the absence of clinical cardiovascular abnormality—this should include past and present cardiac symptoms, physical examination and electrocardiogram—is of value in that apparently it excludes masked coronary artery disease. Unfortunately, in normal aging persons over 50 years of age (this is the group we most need help with) there seem to be extra-cardiac factors which produce an increasing incidence of abnormal ballistocardiograms, reaching 66% by 55 years of age. The trend to abnormal ballistocardiographic tracings is increased by overweight. The factors of age and weight seriously limit the usefulness of the ballistocardiogram in the detection of cardiovascular disease abnormality in persons over 50. Also, further follow-up will be necessary properly to evaluate the significance of abnormal ballistocardiographic tracings in normal persons under 50.

We consider that the combination of a positive double "two-step" test and an abnormal ballistocardiogram is of sufficient significance to use it as a special motivating factor in health counseling as regards weight reduction and elimination of smoking. This becomes particularly important in those individuals with a family history of degenerative cardiovascular disease or diabetes mellitus. It should be emphasized that these abnormalities are not diagnostic of coronary artery disease, and proper caution is to be observed in discussing the findings with lay persons.

Metabolic Diseases

DIABETES mellitus was the most common metabolic disease (15 cases) detected by periodic examination, and nearly 75% of these were accomplished by routine postprandial urines. On several occasions, the diagnosis was first made by specific use of the postprandial blood sugar. The superiority of the postprandial urine and blood sugar in contrast to the fasting specimen in establishing an early diagnosis of diabetes mellitus is well recognized.

Gout was second in incidence with 11 cases detected. In nearly all, the first clue to gouty diathesis came with the finding of an elevated serum uric acid (six mg. percent) on routine examination, particularly in the overweight group.

Hypercholesteremia was present in less than 2%, and in only a few cases has it been associated with cardiovascular disease. Originally, blood cholesterol was checked only in the overweight group, but in the last several years it has been done rather routinely every two to three years. It is interesting that as the group examined has advanced in years, there has been a small but distinct increase of abnormal figures (over 280 mg. percent) in those who were previously normal. In the vast majority a return to normal levels has been achieved by weight reduction with a reduced dietary fat. But we do encounter an occasional case which does not respond to dietary measures and even the use of chemical agents. We have not had any experience with the study of serum lipoproteins. In contrast to the results published by Gofman and his co-workers, other studies[4] have revealed that the spread of values in normals of these lipoprotein molecules is so wide that many persons with hypertension and coronary artery disease fall within this normal range.

The relationship of diabetes mellitus, gout, and hypercholesteremia to degenerative disease is under continuing study, and every attempt is made to correct the metabolic defects as a preventive measure.

Cancer Detection

THE PERIODIC examination may not uncover hidden malignancy which is without symptoms or in an incipient stage. Medical experience does not warrant the time and cost involved in large scale routine x-ray surveys. It is recognized, particularly in the case of lung tumor, that the rapid growth rate of such tumors does not allow their detection by routine annual x-ray. The malignant tumors that were detected in the course of periodic examination in our series were nearly all associated with definite symptoms. Those patients who presented themselves early were able to have their tumors successfully removed. The greatest value of the periodic examination program in regard to cancer detection appears to be a health consciousness. At times a silent but well-developed cancer was detected by routine examination.

The periodic examination can be utilized in the search for the precursors of malignant disease, such as achlorhydria, but this will add to the cost of the procedure because of more extensive laboratory and x-ray studies. The detection of asymptomatic gastric cancer has been reported to be increased to several times the usual rate by the routine gastric x-ray of persons with achlorhydria. A routine proctoscopy has also been recommended in the physical examination of adult patients for the detection of malignant and premalignant lesions of the rectum and sigmoid.

Proctoscopy was not done routinely in all our cases. It was begun in the age group above 55 years and is gradually being extended to those in

the lower age bracket. Also a routine re-check within a five-year period has been inaugurated and has resulted in the detection of an additional number of asymptomatic polyps. Our experience shows an incidence of benign polyps in 12% of those who underwent routine proctoscopic examination. In persons with bowel symptoms or a complaint of rectal bleeding the same incidence of benign polyps was noted. In addition, one case presented multiple malignant polyps and two had carcinoma of the rectum. The value of routine proctoscopic examination was not enhanced by routine colon x-ray study. Asymptomatic diverticulae were noted in approximately 20%, but no polyps or neoplasms were found.

Summary

A PERIODIC examination program conducted on an out patient basis is not only very practical, but it also has some tangible benefits. It was notable that a sizable number of those examined (35%) had conditions revealed to them and more than half of these were without symptoms. Of the major conditions detected, 43% were discovered in the initial examination and 57% by re-examination.

Further proof of the value of the periodic examination is indicated by the fact that in 20% the conditions noted were entirely corrected, and 33% were improved by treatment. In a large percentage of the remainder, medical supervision enabled these individuals to carry on their usual business activities.

The history and physical examination remain the basic tools of diagnosis in both the asymptomatic and the symptomatic group (60%). The value of routine laboratory studies appears limited to the postprandial urine and occasionally a postprandial blood sugar. Serum uric acid and blood cholesterol determinations continue to require study in degenerative disease. Despite recognized limitations, the routine electrocardiogram has a definite value. The very nature of malignant disease limits the value of routine x-ray examination in cancer detection. This study confirms that the best we can hope for in the early detection of malignant disease is the prompt investigation of specific complaints. On the other hand, routine proctoscopy has demonstrated its usefulness in the detection of the precursors of recto-sigmoid cancer in asymptomatic persons. The clinical application of stress tests, such as the double "two-step" electrocardiogram test, may help in the early detection of latent coronary artery disease.

A critical appraisal of a seven-year follow-up in the periodic examination program reveals that such a program can be the basis for the prevention of disability by the early detection of disease.

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Alcoholics

INDUSTRY'S two million alcoholic employees are main target of educational campaign to be launched by National Committee on Alcoholism, according to report made at its recent Eleventh Annual Meeting. Although disease costs industry 60 million man-hours and over a billion dollars yearly, until recently it has been recognized as management concern by only a few companies—including Allis-Chalmers Manufacturing Company, Eastman Kodak Company, E. I. du Pont de Nemours, Standard Oil of New Jersey, Western Electric, and Consolidated Edison of New York. Company educational-treatment programs have arrested alcoholism in 60-80% of employees treated. Typical industrial alcoholic has been employed 11.5 years, earns $2.09 hourly (compared with $1.82 for average worker nationally), according to survey by Allis-Chalmers, whose program—consisting of supervisory education, use of treatment facilities in community, and plant psychiatrist—has cut wage losses from $23,000 to $900 in three years; significantly increased production; sharply reduced accidents; and cut absenteeism among alcoholics from 8% to 3%—lower than plant average. Packet of literature specially prepared for industry, including articles by DR. BRYCE B. REEVE, Director of Medical Department, Standard Oil Company of Indiana, DR. SELDEN D. BACON, Yale Center of Alcohol Studies, and DR. GEORGE F. WILKINS, Medical Director, New England Telephone & Telegraph Company, is available at 25 cents from NCA, 2 East 103 Street, New York 29.

—*Industrial Relations News*, April 7, 1956.

The Engineering of Consent

FOR AN INDUSTRIAL MEDICAL PROGRAM IN THE U.S.

EDWARD L. BERNAYS, New York City

THE CONTINUED health of our 64 million people gainfully employed is the mainstay of our national life. Their health is at the very foundation of our peace or wartime survival. Everyone today ought to be concerned with the problem of ensuring that the best medical care, preventive and curative, is provided for them on a sound economic basis. And yet at present only leaders in fields related to the problem are much concerned—physicians, nurses, public officials, industrialists, trade associations, trade unions, voluntary and profit insurance institutions, hospitals, and the like.

The rash of medical programs on TV, the medical columns in newspapers, widespread advertising of submarginal laxatives and other nostrums indicate the public as a whole is fascinated with health and sickness.

Americans every year contribute generously to organized drives looking to ultimate conquering of such diseases as cancer, polio, arthritis, heart disease, etc. Great strides have been made in some areas of medical research and practice—witness the spectacular decline in the incidence of tuberculosis, typhoid fever, infant mortality. Yet despite this public interest in health, little public attention is focused on trying to cope with the problem of how the *cost of medical care* for our industrial workers shall be paid. Like other issues of national import, this is submerged. Like an iceberg, only a tip is visible. Possibly like an iceberg, it will need a great collision to bring the subject to public attention, just as the Titanic disaster drew public attention to the need for lifesaving devices.

Despite current apathy toward solving the problem on a planned basis, expanding activities of various kinds show varied approaches to meeting the need. Growth of voluntary health insurance plans, health insurance offered by stock or mutual insurance companies, union insurance, and widespread expansion of industrial health medicine in the last decades indicate this.

The increasing numbers of industrial health specialists show the problem is receiving attention, and action, of the medical profession, even if it has not as yet been treated by society as a total issue confronting the American people.

Preparatory to making this talk I devoted some time to studying the literature on industrial health to get some picture of just what current thinking is and has been on the subject.

I found a multitude of magazine articles on one phase of the subject or another appearing in such publications as *Advanced Management, American Journal of Public Health, Journal of the American Medical Association, Fortune, Harvard Business Review, Mental Hygiene*, etc. Likewise I found numerous pamphlets and books by eminent authorities most helpful, such as Victor G. Heiser's "Industrial Health Practices," Gaylord R. Hess' "Medical Services in Industry and Workmen's Compensation Laws," the National Industrial Conference Board "Studies in Personnel Policy," the Princeton Studies, C. O. Sappington's "Industrial Health, Asset or Liability," etc.

A study of attitudes of leaders relative to cost of industrial health medicine recently made by Dr. Frank A. Calderone, industrial health consultant and president of O. H. I., was one of the most recent publications in this area. It was published in *Industrial Medicine and Surgery*, March, 1956. It raises so many provocative questions and impinges so closely on the subject matter of my talk that I shall use it as an introduction to my suggestions to you. The Calderone survey confirms the findings in the other literature I read, and illuminates graphically the lack of a broad and unified approach and plan to deal with this problem in the United States.

Before I present a plan of how to deal with the problem of who pays the cost of medical care of the industrial worker, let me review the study. It was made among businessmen, state health officials, medical societies, Blue Cross and Blue Shield insurance organizations, unions, deans of medical colleges, and editors of medical magazines. The questions asked these people were:

What kind of industrial health medical care should be given? Who should pay for it? How can the individual worker be stimulated to take greater advantage of available preventive health measures? How should the problems of chronological versus physiological age be handled as they affect employment separation? Which groups of society should be responsible for planning or programming these measures? Who should ensure that expanding health care programs do not result in de-personalized service to

EDWARD L. BERNAYS, Counsel on Public Relations; Adjunct Professor in Public Relations, New York University, 1949-50; Visiting Professor in Public Relations, University of Hawaii, 1950; Editor, *Engineering of Consent*, 1955. His lecture followed the Address of Welcome by JAMES P. DIXON, M.D., Commissioner of Health, Philadelphia, at the opening session of the 41st Annual Meeting of the INDUSTRIAL MEDICAL ASSOCIATION, Tuesday afternoon, April 24, 1956, at Convention Hall. This is the SAPPINGTON MEMORIAL LECTURE.

the individual? What should be the role of the industrial health specialist in the picture? What should be the nature of the medical organization to care for the rapidly expanding medical field? Who will determine ultimate policies? Who will control practices in the field? And what safeguards will be established to ensure that the soundest medical practices prevail?

The replies pointed up these facts: First, that the payment of medical costs for the industrial worker is a vital issue among leaders. Many of them have decided ideas about how the problem should be solved. They spoke from the many different viewpoints of their own groups. Management and labor emphasized the importance of preventive medicine. Medical opinion, on the contrary, was mostly lukewarm or cold to the value of preventive medicine in industrial health.

To quote from the survey findings: "Tremendous differences mark the attitudes toward proper scope of future programs. Industry wants expansion held within narrow limits. Unions seek almost unlimited expansion. Medical opinion is mixed, but tends to view expanded medical programs with foreboding, and is particularly concerned with maintaining the status of the individual physician in any future pattern . . . . Future leadership is a storm center of violent and acrimonious opinion."

Now, I don't know what will happen to this important study. I do know that a study on the cost of medical care conducted by the great foundations we were associated with 23 years ago was put on a library shelf and forgotten until the activities of the post-depression period brought the findings to life. Possibly the Calderone study and other studies will suffer a similar fate and only be quoted in bibliographies. I hope not. Laissez-faire is dangerous to you and the public.

If this problem isn't handled through action from within the field by those whose public and private interests coincide, the experts in the field of health, it may be settled by some extraneous force in the tug of war already evident. Adjustment and compromise are essential in our evolving society. There must be adjustment in non-political as well as political areas. Unfortunately, problems that concern the public are not always decided in this way. Men with a knowledge of the techniques of persuasion or pressure politics sometimes lead the public to solutions that the public at the time thinks are right, but which really may not be the soundest.

If you, who have expert knowledge, don't do something about this problem, your rightful leadership may be taken away from you by other groups motivated by a sudden sense of urgency or for other reasons.

You as leaders are the logical group to accept the social responsibility of formulating and winning over the public to sound ideas as to how medical costs for the industrial worker shall be paid for. And by winning public support, I mean the gaining of both public and legal sanctions for a specific program. To do so will require the conscious exercise of leadership techniques on your part. You will have to reconcile conflicting interests and points of view of divergent groups such as the study shows to exist. You will need to devise a plan acceptable to the divergent interests of management, labor, insurance interests, medical interests, etc. This is a challenge to your leadership. But one you will have to accept, unless it goes by default to those not as well equipped to deal with it.

WHEN I talk of leadership here, I am talking of a planned approach to public persuasion first developed during World War I, when I was a staff member of President Wilson's U. S. Committee on Public Information.

This technique, "the engineering of consent," enables us to achieve goals through information, persuasion and adjustment, an essential process in a democratic society. Three forces working together bring about the end result.

The first of these forces is a voluntary group of interested citizens, with an understanding of the problem and with the public interest at heart. They must be willing to be the central point for activities aimed at setting and attaining the goal, in this case, a sound plan for handling the cost of medical care for industrial workers.

The second of these forces is that of public opinion—the force in our society without which there can be no large-scale effective action.

The third is law—the conclusions of an informed and understanding public opinion expressed through legislative act, when necessary.

How will this three-fold program work as regards a sound program for the cost of industrial health care? The first step is to form an organization made up of professional leaders and outstanding laymen from the segments of the public most interested in the activity.

Maybe you already have some constituted body that could undertake leadership in establishing such a committee. For instance, your Occupational Health Institute. The organization or committee, when formed, can then proceed to do in its field what the National Citizens Committee for the Public Schools did for education.

The committee must first define the goals for which it is working. It will have to decide on how industrial health care should be paid for and answer authoritatively the questions asked in the Calderone survey.

The optimum plan for handling health care costs may not necessarily be a monolithic one. This is a big, diversified country. It might be that the group would decide that varying solutions best fit varying situations. The problem is in some ways analogous to that facing the nation in bringing order out of the chaotic situation existing in the field of transportation of goods. How useful to all would be a working plan carried out that would integrate the various carriers by water, rail, and truck into a whole. Such a pattern would provide a basis for compliance by voluntary means, and by legal sanctions.

Just so, the committee we envision will likely find some health services should be paid for by

the individual, others financed by industry and labor working together, some by industry, others by labor alone. Some may provide for voluntary, others for enforced insurance, or whatever.

I do not presume to advance any specific recommendations. I am trying to suggest only the method by which to arrive at them. But what should emerge is a planned, integrated pattern replacing the present chaotic and conflicting picture.

Above all, the thinking must be large-scale and comprehensive. When you deal with a problem which concerns the welfare of 165,000,000 Americans, thinking naturally has to be along broadest lines. It is just as easy to think big as it is little.

As I have pointed out, the committee would, in its thinking, have to adjust the areas of disagreement between many groups. It would have to do so in a statesmanlike manner. But the growth of America with its diversified viewpoints has shown that this kind of adjustment is what makes us strong. Money to carry out this first step of organization and decision making might be provided by one of the great foundations.

Having set its tentative goals, the next step would be for the committee to undertake research to find out whether the tentative solution can gain the consent of the people, and what phases of it, if any, are susceptible of translation into law.

Such a research along the lines of the Calderone survey would be broader in scope and depth than facilities and resources then permitted. It would probe a larger cross-section. It would attempt to find broad public reaction to the program contemplated. Such a research would attempt to find out why people were interested or disinterested, and what would need to be done to gain their interest. The committee might find that the objectives set were not immediately realizable and it might be necessary to reorient them to some degree.

There are many research techniques available which have been successfully applied by nonprofit organizations like the University of Michigan Group Dynamics Center, and by profit organizations of opinion research. These you would adapt to your specific needs.

Now it will be possible for you to proceed to the next step: formulation of strategy. Will your strategy be a blitzkrieg, an immediate, intermediate or long-term attack on the problem, or some other approach? You may find that your initial strategic plans need to be modified to meet changing conditions—the shifting climate of opinion, the economics prevailing at a given time, and any number of circumstances. So, your strategy will be a flexible element in your procedure.

Appeals are essential in an activity of this kind. The appeals that you will need to make in such an activity will, of course, be different for different groups of the public. You will be able to enlist the interest of trade union leaders on one basis and the interest of insurance companies on another. You will be doing what any group in a society as multiple as ours has to do, i.e., project your idea in terms of the interests of the groups concerned. Differing themes will appeal to individual and to group motivation. And these appeals also will vary with the times. Appeals will be based on research findings. They will stem from what the social sciences have taught us about the satisfactions men and women seek. They will be based on the values of our culture as those are felt and accepted by different groups.

As to the extent of the working organization needed to carry out these activities, you will find that this will depend on how much acceptance your research indicates your public already gives to the solution you propose.

Your organization must be manned by men and women equipped by skill and experience to deal with problems of presenting facts and points of view to the American people in a sound and ethical way. The National Citizens Committee for the Public Schools spearheaded the attack of getting better public understanding and support for the public school system. So will your group spearhead an attack on the problem of who will pay the cost of medical care of the worker.

Next we come to the planning and timing of your actions. Actions or tactics are the methods by which you carry out your strategy, the things you do. The success of your activities will depend upon the effective interlocking of your resources of mindpower, of manpower and of money, as geared to your research findings. In planning action, you must never view what you do on a segmental basis, but rather from the standpoint of everything coordinating with everything else.

Sound tactical procedure should cover your activities in informing and persuading your publics, whether your efforts be to achieve your goals by voluntary action of the public through public opinion support and/or through the addition of laws which will buttress such support. Communications tactics will guide your contacts with the public through media—newspapers, magazines, radio, television, motion pictures, pamphlets, lectures and contact with influential group leaders and opinion moulders.

And, of course, you will remember that planned events such as the White House Education Conference, which crystallized public opinion support for the public school system, are the kind of tactics you must keep in mind.

It would seem to me that men and women of the social responsibility represented here, heading up great national associations, should find it in the public interest and their interest to urge their associations to take the initiative in joining their heads and their hearts, to hammer out a platform and program for the approval of the American people. This is not an untried method in American life. To act in this way is in keeping with the very essence of a flexible, dynamic society which, through effective leadership, can eliminate the twin dangers of laissez-faire and a planned society at the same time. Through utilizing the sound methods of information, suggestion and persuasion, leaders such as yourselves can show the American people where they want to go in this great field.

(26 East 64th Street)

Inter-Personal Communication

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IN A WORDY culture in a wordy world, where each of us is in such intimate contact with so many people and where so few of our acts are carried out in social isolation, the human study of human communication takes on very great significance. It seems to me an evidence of wisdom on the part of the Annual Industrial Health Conference that you have chosen to address yourselves to the general topic. Whether my own involvement in your program is wise, either for you or for me, remains to be seen. But I can report to you that I approach the topic with enthusiasm, that I have done some alleged thinking on the topic in recent weeks, that I now set forth, with considerable fear and trembling, on the attempt to communicate about communication.

Perhaps as a harbinger of things that will come along in the next few minutes, let me make the very simple-minded observation that communication involves (a) words and (b) people. In talking about communication, it is possible to focus either on words that people use or on the people who use words. There can be profit in either kind of focus. The study of words is a fascinating occupation, and such studies of words as have been conducted by Thorndike and Rudolph Flesch and Hiyakawa and Wendell Johnson and many others, have both intellectual tickle and some fairly obvious practicality. It is my present contention, however, that a focus on people who use words is a more nutritious focus.

I wish to direct your attention to some considerations of the people who communicate and receive communications. In our present state of knowledge, I am not optimistic that I will make statements either of everlasting validity or of hard practicality, but it may be possible for me to provoke some one into thinking a thought he has not thought before. And it may be possible for me to create for you some relatively profitable confusion. (I perhaps should report to you my own personal belief that enlightened confusion is the stuff out of which social and intellectual progress is made.)

At any rate, I wish to talk not about words and sentences and paragraphs, not about vocabulary or lexicon or subordination or periodicity, or even about the fascinating field of semantics. I want to talk instead about people—people who involve themselves in the processes of communication. Mainly I want to talk about the communicatee—if there is such a word—about the recipient of communication.

It is the recipient of communication who determines whether communication has happened at all. He validates communication. Through his behavior and only through his behavior can we tell whether the communication has been more than interpersonal noise. It is perhaps true that much of the intended communication of the world misfires or miscarries or fails entirely because the communicator pays more attention to his bow and arrow than to his target. Many of us, even perhaps as now, spend much of our time talking to ourselves in the presence of others, and succeed in communicating nothing more than the facts that we are talkative or verbose or bossy or pleasant or entertaining or articulate or inarticulate—facts the communicatee may find of relatively little use in the solution of any of his problems. Perhaps the first fundamental principle of communication is that it must hit at its target. It is with this world-shaking observation that I wish to begin.

I WANT TO TRY first to paint a picture of the recipient of communication as an intricate decision-making mechanism. Let us think for illustrative purposes of a patient in a doctor's office, a patient with a problem, a patient with a decision to make about what he will do in solving his problem. I am aware, of course, that in talking about the individual patient in the physician's office, we are not talking directly about the wide varieties of communications in which you engage. I am also aware that in talking about a patient with a problem we are ignoring for the moment the fact that the physician may also have a problem, and that the communication with the patient sometimes has as much to do with the solution of the physician's problem as it does with the solution of the patient's problem. But for the time being, I think we could use the patient in the office as a general example, a general example that may help clarify the communications process.

The patient with a problem can be viewed as an elaborate integrating mechanism, having much in common with an electronic computer. The signals coming from the communicator represent the *input* for the communicatee's system. These signals enter through whatever channels are available, and then get themselves involved in the internal pathways, barriers and mechanisms of the system. The signal is rearranged, is in-

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DR. SANFORD'S presentation was part of the Symposium on "Communicating and Convincing" at the Joint Meeting of all the participating Associations, INDUSTRIAL HEALTH CONFERENCE, Philadelphia, Tuesday, April 24, 1956.

tegrated with the memory traces of other signals from the past, is made into something the system can use in producing its *output*—which is action or decision.

The signal that gets into the patient's system is the total pattern of stimuli passing the system's boundaries. What the doctor *says* is part of the pattern—if the patient pays any attention to what the doctor says. What the doctor *is* is also part of the pattern. Verbal signals are probably never naked things; they come clothed in perceptions of the total surrounding situation. The physician's facial expression or the color of his hair, the behavior of his receptionist and perhaps the color of *her* hair, the appearance of the office—these and many other subtle things constitute the pattern of signals impinging on the system of the communicatee.

The recipient's system itself helps determine what its input will be. (And in this respect, the system differs significantly from an electronic model.) The boundaries, in a specific situation, may become very impermeable. The system may protect itself from unwanted signals. For example, the patient may, on the basis of his first impressions, disagree so much with the physician that he hears nothing the physician has to say.

Once the signal passes into the system of the recipient, a variety of things can happen to it. The signal can be blocked off from the integrative processes of intellect and get not much further than the boundary. We speak of this as "going in one ear and out the other." Or the signal can be "taken seriously." It can lead to critical evaluation, to integration with past experience, to evaluation, and then to creative use. Or it can lead directly to action, by-passing all processes of integration and evaluation. In this case the signal goes in one ear and out into direct activity, with nothing much happening in between. If the communicatee is hypnotized, something like this happens.

Any human system with which one tries to communicate will have its own individual characteristics. It brings with it into any interpersonal situation its own personality—its own level of intelligence, its own past experience, its own needs, aspirations, bigotries, wisdoms. It brings a readiness to receive certain kinds of signals and to reject others. Some of these attributes are highly individual. Others are picked up from the social environment and are widely shared by members of a given group. You are more aware than I of the attitudes toward the doctor and toward the Medical Department that are commonly shared in a plant or among workers generally. It is these attributes of the recipient's system that determine which signals get in and which signals are turned to useful ends. And it is these attributes—particularly some of those most usually spoken of as personality attributes—to which I'd like to direct your attention.

LET'S LOOK for a moment at the effect of plain basic intelligence on the functioning of the recipient's system. The highly intelligent system, other things being equal, will be characterized by many input channels, each relatively sensitive to outside stimulation. Such a system is relatively easy to enter, is relatively permeable to outside events. And such a system operates with speed and efficiency in sorting, assessing, and integrating signals. The unintelligent system, on the other hand, will have more impermeable boundaries. Only obvious signals, driven home with a hammer, will enter. And internal operations upon the signal proceed in slow and painful ways. The communicator who does not deal accurately with the intelligence of his target system will commit inefficiency. To underestimate intelligence is to fail in using the system at its best. To overestimate intelligence is to feed in a mess of confusion, that can be turned to no good use. And to insult intelligence in either direction may produce a closing down of the input channels entirely, with all the communicator's signals completely rejected.

Another aspect of systems, we need to keep in mind, is their rigidity or flexibility. Some systems are characterized by such rigid organization that they open themselves only to those signals fitting comfortably into existing beliefs and attitudes. If any one of a plethora of fixed attitudes is rubbed the wrong way, input channels are shut tight and no communication occurs. And where signals do get in they are turned and twisted until they fit into the rigid internal mechanisms. The flexible system, on the other hand, can receive and deal with a much wider variety of input. It may court wide stimulation and turn its internal processes adventurously to the task of making the best of all possible uses of the signals it receives.

We might put a finger on many attributes of the recipient's system having a definite role in determining whether real communication happens, whether signals enter the system and are constructively used in the solution of a problem. The attributes dealt with above can be regarded as examples. Perhaps of more significance than the variables of intelligence or rigidity, particularly when experts are trying to communicate with the not-so-expert, is the recipient's *basic orientation to authority*. When in the presence of an expert, the individual's habitual way of responding to figures of authority has a direct and determining bearing on the openness of his input channels and on the fate of signals once they enter the system. And the expert's handling of his own role, in the face of the communicatee's basic attitudes about authority, will make him either effective or ineffective.

Let us talk for a moment about dependence and independence. Any communicatee, at any time, might be located at some point along a continuum that runs from extreme dependency at one end to extreme independence at the other. Some people have been trained into chronic dependency. Throughout life they have been made to learn that the best way to solve any problem is not to think about it, not to examine it critically, but to defer quickly to available authority. Such people

solve problems not by learning but by leaning. Such people, though sometimes highly educated, may never bring to bear on the solution of any problem their own past experience or their own critical abilities. They want answers rather than facts, mandates rather than maybe's, orders rather than ideas, answers rather than suggestions. The integrating processes within such systems, when such systems are brought into the presence of an expert, are very simple and direct. Signals come in at one end and behavior happens at the other. Information is not stored for later independent use, nor are signals critically examined or evaluated or selected or screened. When a new problem arises, the dependent person scurries to the nearest expert to get an answer. The simpler the answer and the more directively it is supplied, the happier he is. In a way such patients are cases of "ambulatory anesthesia." The physician is accorded god-like power because the patient needs it that way. And such systems are very readily welcomed by those experts who find it compatible to play directively the role of an omniscient, god-like authority. There is perhaps some considerable danger in such a cozy symbiosis between the directive authority and the dependent patient. As we will see, almost any system eventually gets itself involved in what the engineers designate as feed-back. Even the most dependent system, if it has any sensibility at all, will find out eventually whether or not the god-like pronouncements actually lead to solutions. Many of those who are most dependent, and who need dependency desperately, will eventually become very hostile and disillusioned when the expert turns out to have been wrong. Such dependent individuals are probably the very ones who switch doctors often, for neither medical science nor medical wisdom can provide quick and sure solutions for every problem, and one failure on the part of a god is sufficient to give the god feet of clay. A general observation might be that adoration and hostility are near allied.

AT THE OTHER END of the dependence-independence continuum is the system trained to independence. The independent person is not inclined to put himself entirely into the hands of experts. He likes to run his own life, to make his own decisions, to solve his own problems. Faced with any signal input, he brings into play a lot of past experience, appreciable knowledge, and ability to sift evidence and to examine relevant facts with precision and logic. He seeks a variety of inputs. He may even cultivate confusion in the interest of being sure that he sees all possible facets of a given problem. Such a system is probably characterized by the ability to make tentative decisions. He listens to advice; he assembles facts; he makes a decision and then tests it. He validates his own behavior. He tries something out to see if it works.

Just as the highly dependent person has very permeable input channels in the presence of authority, the independent person may be highly selective as to the kinds of signals that will pass deeply into his system. And his independence may reach such a cantankerous height that he listens not at all to the voice of authority. Perhaps he will reject entirely any signals that are given to him in an authoritative way or with an authoritarian flavor. He will resent anyone who tries to short-circuit the processes his system is designed to handle well. Communicators who like to play their roles directively, who enjoy the illusion of omnipotence, will not particularly enjoy the processes of communicating with such an independent system. On the other hand, the expert who plays his role as if he were a teacher, who exults in the independence of his patients or students, will appreciate very much the critical-mindedness of the system he is confronting, and will be quite happy to assist in processes whereby the expert uses his skills in such a way that the communicatee can be as free as possible from experts.

The point here is that communicatees vary widely with respect to dependence and independence. The skillful communicator, interested in producing behavioral results, will gauge his communication with respect to the dependence or independence of the system he confronts. To talk directively and to play god in the presence of the independent system is very probably to fail. To be non-directive in the presence of great dependency is to create perhaps more confusion than the dependent system can possibly stand. Again, the skillful communicator is one who can adjust the processes of communication to the attributes of the system with which he is dealing. Perhaps among communicators, in the medical field as elsewhere, we find persons who cannot adjust to these complicated attributes of the seeker after help. Certainly you and I know people who can approach the process of giving help only in a directive and Olympian manner. There are others, of course, who must be brothers to every man, who are perhaps even neurotically non-directive, and who cannot give direct advice even though they are qualified to do so and even though it is highly adaptive in a stressful or emergency situation.

Another thing we need to remember about dependence and independence is that any individual differs with respect to this variable from time to time. The person who is in a life or death situation, who is deathly afraid or desperately in trouble, will be more inclined to accept without question the directive dictates of the available expert. Even the highly independent system can voluntarily decide to take an anesthetic and to put his problems completely in the hands of the surgeon. He then becomes, of course, truly a patient; he waits patiently and passively for his problem to be solved. With the reduction in the emergency, however, he will return to his characteristic level of independence and critical-mindedness.

When emergency is present, dependency and great stress characterize the system. Systems under stress are difficult systems to deal with. Perhaps the most significant aspect of the physician's competence is his ability to deal with systems

under stress—to demonstrate the strength and calmness and wisdom and knowledge necessary to help the individual under stress. Stress can reduce enormously the adequacy and efficiency of a system's internal structure. Communication becomes both more simple and more difficult. The physician may communicate nothing more than his own confidence, strength, and competence, and he does this often without words. In stress situations such communication is enough. But when there is no stress, the physician's role had better change considerably. Perhaps a frequent mistake medical communicators make is to act, in subtle ways and without knowing it, as if every system they confront is under stress and ready to play the dependent role. The habits of strength and control and responsibility *for*, so essential in emergency, may become so firmly ingrained that they are employed, and maladaptively, in situations where sensitivity, warmth, understanding and responsibility *to* are more in order.

WITH RESPECT to this general area of discourse, let me move off for a moment into something that might be called crystal-ball sociology. We have stated that there are wide individual differences with respect to the dependence-independence variable. We have also made a case that the degree of independence of any individual varies with the nature of the situation. On a more abstract plane, I think a good case can be made that in the socio-cultural cards are some coming changes that will increase the independence of the general public and will have a direct bearing on the role the experts will have to play.

I think we can count on it that there will be a continuing increase in the level of general education. We have already moved from a situation in which there are few knowledgeable experts and many abysmally ignorant laymen. Laymen just can't be counted on any more to be ignorant. With respect to health matters, the public is much better informed than a generation ago. With the amount of formal education on the increase and with the increased potency of communication media, there will continue to be greatly increased freedom from ignorance. The knowledgeable expert—physician, nurse, engineer or minister—must deal more and more frequently with knowledgeable persons.

FOR THE MEDICAL profession, perhaps even more significant than increased knowledge is the increasing freedom from the killing diseases. This freedom can be seen already, and quite clearly, in the decreased fear of death. Have you stopped to think how few children these days have any personal experience with death? Compared to 50 years ago, people rarely die now in the prime of life. Grandpa still dies. And eventually so does Grandma. But such deaths, coming after full lives and after the more significant functional roles have been played out, are not conducive to very debilitating emotions. As a matter of fact, such deaths are sometimes greeted with private sighs of relief. Generally speaking, the dread fear of death has decreased enormously. It will decrease still more as we come into greater freedom from disease. This decreased fear perhaps will bring about marked changes in the role and in the communicative functions of the medical experts. Fear produces dependency and dependency produces a willingness to lean on the solver of the problem. As fear declines, independence grows; and with it grows a disinclination to gulp down any ready-made solutions pontificated from above.

As there is general increase in freedom from ignorance and in freedom from dread disease, the medical profession will find itself, through the success of its own efforts, faced with a changing role. It will be dealing more and more with prevention of debilitation and less and less with the prevention of death. And it will be dealing with a public not characterized by the dependency born of fear and ignorance and stress.

These changes will mean that the medical expert will become more of a consultant to the person he serves and less of a magical fixer. He will become more of a teacher and less a writer of arcane prescriptions. He will solve fewer problems for people and will devote more time and more communicative skill to educative processes enabling people to solve their own problems, to gain more of the freedom they cherish, including freedom from experts.

We have put a good deal of emphasis on this dependence-independence business. And in both the amount and flavor of this emphasis you can probably perceive some kind of Jeffersonian bias on my part. But bias or no bias, I think there will be increasing independence among the people you want to do business with, and I think there will be a definite need on the part of many of us to learn more about how to relate with people who want our help but who want to make their own decisions and to run their own lives. I am quite convinced that the expert who wants to *tell* more than he wants to *teach* will not communicate with the independent person. And I suspect that catering to dependency of the leaner, while it works well over the short run, is not conducive to the long-term welfare of the dependent person—or to the welfare of the communicator.

We have talked briefly about the intelligence and the flexibility of the communicatee's system and we have dealt at some length with the communicatee's need for dependence or independence. All these concerns, particularly the latter, have a significant bearing on the effectiveness of communication. But I think we have to regard them as examples only. There are other personality attributes that bear on the fate on any incoming communication. And there are alternative ways, of course, of conceptualizing the personality factors we have dealt with here. But the general point, I hope, is clear.

Now, enough of that. The general point is that factors in the communicatee influence mightily whether communication occurs. And the one who wishes to communicate had best know and respond adequately to these if he really wants to make a difference in the life of the recipient.

BEFORE leaving this analogy of the recipient as a system, we ought, to round things off, talk a bit more about the phenomenon of *feed-back*. We have said that the signal gets into the system, is subjected to some sort of process within, and that decisions and/or behaviors come out. Human systems of course do behave. But perhaps the most important characteristic of human systems is that they react to their own behavior. They act and they then watch the action. They get feed-back from their own behavior. This feed-back becomes another kind of input in the system. In a way of speaking, the system works out for itself a hypothesis, designs an experiment to see if the hypothesis is any good, then observes the results. If the results are confirming, the behavior is stamped in. It will be used again in a similar situation. If the feed-back is invalidating, showing the behavior to be no good in solving the problem, the behavior will be dropped and solution sought in some other way. I will not belabor this feed-back analogy, but there are some points here worth at least a brief mention.

1. Individual systems vary in their use of feed-back data. Some systems use it extensively as a way of accumulating knowledge enabling them to run their lives independently and effectively. Other systems are relatively closed to feed-back data. They behave but they do not learn much from their behavior.

2. Negative feed-back—data indicating the behavior is not effective—will lead to the kind of problem-solving efforts to which the system is accustomed. If the solution does not work, some systems seek out the authoritative expert, perhaps not the one who gave him bad advice. Other systems will examine the results critically, will independently revise the experiment, will try a somewhat revised experiment and will work gradually toward a solution.

3. The evaluation of feed-back is always in terms of the system's own problems. Behavior that is retained may not be the behavior the expert would like to see retained. It is the behavior that has a pay-off for the system with a problem. Perhaps for many systems, all the expert can hope to achieve is an input of information that will lead the communicatee to set forth on an intelligent series of experiments, a series that will supply rich feed-back and eventually lead the system to solve pretty much for itself those problems it wants solved. Certainly in communicating with independent systems, the communicator's most effective role is that of supplier of information and/or alternative hypotheses which the system then can use to work out its own salvation. Such are the aims, and laudable ones, of industrial health education.

So much for the systems of the recipient—the system with input, internal dynamics, output and feed-back. This system is crucial for communication. But so, of course, is the system of the communicator himself. So far we have pretty much ignored the fact that communication is a two-way process and we have simply assumed the communicator without noticing him very much. Before I work myself up to a conclusion, let me say a few words about the communicator.

IN A FACE-TO-FACE situation the communicator, viewed as an operating system also has an input, internal dynamics, and output.

Input is what he gets from listening to and observing the person he confronts. This input can be relatively skeletonized or relatively subtle and rich. One sometimes suspects, for example, that when a person walks into a physician's office he is seen not as an individual human being with a unique problem but merely as a patient, *homo sapiens* type. Many people have observed that when they become involved in processes of organized medicine they become things rather than people. I will not elaborate on this point except to observe that there is a vast difference between the physician who observes the subtle attributes of the patient's total system and the physician who accepts as input only the obvious symptoms of a depersonalized patient.

The dynamic processes within the system of the expert are very similar to those within the recipient of the expert's signals. Of course, specialized knowledge is much greater and the specialized functioning of critical processes is more highly developed. But there is personality there, too. It will be sufficient here to observe that what gets into the expert's system and what gets out will both be determined in part by such variables as the expert's basic personal needs in the situation. Does he need only to be useful to another human being, or does he need to be powerful, or respected, or loved, or obeyed? Or some of each? One might trace out the effects on communication of each of these personal needs. They are clearly there and, in spite of individual or institutionalized efforts to keep them within bounds, they remain important determiners of communicative effectiveness.

NOW, to head rapidly toward a terminal period, let me tell you, in a sentence or two, what I think I have said and a bit of what I think I have not said. Let's take the latter first. I have departed quite drastically and perhaps dangerously from the usual role of the psychologist. I have not presented research data, and I have not tried to point out how hard and demonstrable facts can be turned to your use. I have instead written an essay on communications, an essay without much factual content. While I hope and believe that what I have said is consonant with established fact, my intent has been to present a model, a framework, into which you can fit the every-day facts and realities with which you deal.

My assumption is that I am directing my signals to intelligent, flexible, independent systems, each of which has the capacity to turn to his own ends almost any kind of signal. If the noises I have made help you think differently about your own problems, then perhaps the time has been well spent. And if it should happen that I have helped any one of you think more effectively about your problems, then I am rich indeed.

Experience in Communication and Persuasion in the Area of Health

WILLIAM P. SHEPARD, M.D., Second Vice-President
Metropolitan Life Insurance Company, New York City

IT IS MY purpose to show that the principles of communication and persuasion, and even of "engineering consent" are somewhat different in the field of health. I shall describe some of these differences and indicate how the general principles are most effective when supported by the modern principles of health education.

Objectives in Health Education

IT IS NECESSARY, first, to examine the meaning of communication and persuasion. We may succeed admirably in communicating an idea, but leave the individual unpersuaded, and thus fail in our purpose. It seems to me that what we in the health field seek is the ultimate objective of health education, "To improve what people think and do about their health."[1] If we can agree on this, we can focus more sharply on the solution of our problems in that important segment of the industrial health program—health education.

Problems Unique to Health Education

LET US SEE why the techniques of communication and persuasion, which we hope may lead to an improvement in what people think and do about their health, are different from, or at least more elaborate than, the techniques used elsewhere.

The foreman in industry communicates, persuades, and "engineers consent" with well-known techniques, and with what seems to us enviable success. He is helping a man learn his job well so that he may earn his wages, and perhaps increase them. The foreman's job is much easier because of a basic desire of most people to find satisfaction in a good job well done. This is not always true in the health field; the man may not want to change lifetime health habits and beliefs. He may feel that he derives more satisfaction from faulty health habits than good ones.

The propagandist whose methods are often used wittingly or unwittingly in the health field, communicates and persuades, sometimes with spectacular results, but his results are often momentary and evanescent.[2]

The industrial safety engineer comes closer to the health educator in his over-all purpose, and here again, we often envy his success. The safety record in industry for the past two decades is the brightest spot in the whole field of safety education.[3] The safety engineer has the advantage over us in health education because of his sound slogan, "The right way is the safe way," which management and foremen have accepted. Thus the worker's immediate superior, to whom he looks for guidance, and supervision, is also his safety teacher. The intricacies of health education are such that we rarely have that advantage.

Successes and Failures in Health Education

THE VITAL statistics of the nation show enormous improvement in health, some of which can surely be credited to health education, within industry and without. Many of the scourges from which our grandfathers suffered have been all but eliminated. The average length of life in this and a few other countries has finally reached the Biblical "three score and ten" for the first time in history. The great killers of yesteryear, tuberculosis, typhoid fever, infant and maternal mortality, show astonishing reductions.

Nevertheless, as we look back, it has been a long and rocky road that we have traveled in our efforts to educate the public in health matters. A few of the rocks have been of our own making. Whether we can profit from our mistakes by learning not to create our own obstacles, the road ahead still looks long and tortuous. It was more than 100 years after smallpox vaccination had been proved safe and effective that it was generally accepted by the public. For a whole century the anti-vaccinationists made deep impressions on the public mind, and vestiges of their influence still haunt us occasionally. It was nearly 25 years after diphtheria immunization had been proved safe and effective that it became generally accepted, and even today sharp localized epidemics of diphtheria have aroused the concern of the Public Health Service and local public health authorities. For years the antivivisectionists obstructed, and in some places all but stopped, the scientific research so essential to progress. Today we have the anti-fluoridationists!

For over four decades the Metropolitan Life Insurance Company has published pamphlets, produced motion pictures, and used popular magazine advertisements and radio broadcasts, the continuous theme of which has been "See Your Doctor." We believe we have contributed effectively to similar efforts by the nation's health agencies. That none of us has been entirely suc-

DR. SHEPARD'S presentation was part of the Symposium on "Communicating and Convincing" at the Joint Meeting of all the participating Associations, INDUSTRIAL HEALTH CONFERENCE, Philadelphia, Tuesday, April 24, 1956.

cessful is attested by the fact that there is hardly a practicing physician who is not called upon to treat many patients who have come to him too late. They either never heard this admonition or failed to be persuaded by it. For many years we and other authorities have broadcast the advice that it is wise to have a periodic health examination. Yet many Industrial Medical Directors who offer a periodic health examination on a voluntary basis report "discouraging response." A recent opinion survey showed that 80% of the public interviewed endorse the principle of a general physical check-up each year, but only three out of 10 actually have one.[4] We still record an increasing number of cancer deaths, of which one-third to one-half could be prevented had this advice been followed. The American Diabetes Association estimates that there are 1,000,000 cases of this disease undiscovered in the country today. The National Tuberculosis Association estimates that there are 150,000 unreported active cases of tuberculosis.[5] To top the story of our slow progress in health education, there is still a persistent demand for free medical care at government expense and under government control!

It would seem, therefore, that while industry has been surprisingly successful in developing and teaching new methods of production and in the techniques of communication and persuasion, we who are responsible for medical programs in industry, of which health education is an important part, have made good progress but still lack outstanding success.

This, in my opinion, is because communication and persuasion in health are more complicated than in other areas. In the field of health education our major problems today have to do with the behavior of the individual. We seek to lead him to do something different from what he has done before. His motivations for so doing differ from those involved in trying to learn the best way to do a job. Health beliefs, like politics and religion, are often highly personal. The intercession of "the boss" or anyone representing him in health behavior and health beliefs is often resented. This is because health behavior and beliefs are often based on deep conviction. They are determined by emotions, attitudes, traditions, family mores, often religion. Changing these beliefs is, therefore, difficult as such changes may require facing unpleasantness, such as the danger of disability, or even death. The individual has far more motivation in seeking a newer and better way to do a job, thus increasing his job satisfaction and his earnings, than he has in facing the fact that he is overweight and must reduce his caloric intake if he is to avoid future trouble with his cardiovascular-renal system.

The Deep Personal Nature of Health Beliefs

THE DEPTH of health beliefs and attitudes, and the methods by which they are improved, deserve careful study. Such study has been facilitated by a recent volume published by the Russell Sage Foundation entitled "Health, Culture, and Community," which might well become the bible of the health educator. It presents a series of case studies from various parts of the world where attempts were made to change people's health attitudes and behavior. It analyzes the reasons for success or failure. While some of the examples may seem to us extreme, the underlying principles hold good in our attempts to improve health attitudes and behavior in industry today.

For example, in a small village in Peru, the drinking water was grossly contaminated and the mortality from enteric infections was appalling. The obvious remedy was to induce people to boil their drinking water. After two years' effort, a team of competent sociologists and health educators connected with the local health department had succeeded in persuading only 11 of 200 housewives to boil their water. The natives in this village had strong beliefs, dating back many generations, concerning the use of heat and of cold. To paraphrase it: *Everyone knew, and had always known as long as they could remember, that heat was associated with illness, cold with good health. Boiling water meant heat, hence illness, not health, as these strange white people would have you believe!* There was strong tribal adherence to orthodox behavior with respect to these and other beliefs. The health department and its personnel were considered an outside group, not belonging to the tribe. To accept the standards of these outsiders involved defection from the orthodox group, as serious to them as we now might consider defection from democracy to communism.[6]

In a village in India, the western-trained and equipped physician was told, "Western medicines are best, but doctors never cure anybody." Illness and death in this village were excessive, their causes ranging from hydrophobia to dysentery, trachoma, cholera, smallpox, typhoid fever, gonorrhea, tuberculosis, and extreme states of malnutrition. The physician's services were rarely called for, since, in their belief, doctors never cured anybody. "Trust, responsibility, charity, power, respect—these are the issues on which failure turned. These are not technical issues but issues which concern the cultural definition of medical rules." The writer concludes, "We must understand the nature of the existing social and medical institutions of the village, and how these institutions influence the manner in which the villager perceives the western medical practitioner."[7] To paraphrase again for our purposes today: *The industrial physician must understand the nature of the existing health beliefs of the individual, and how these beliefs influence the manner in which the individual perceives the physician and his advice.*

In a small town in Canada an attempt was made by a team of well-trained sociologists to alter and improve the attitude of the community toward mental health and mental illness. They applied all of the classical methods of health education for six months without success. The citizens of this town did not believe in sorcerers or in a religious communion with the universe, but their convictions about the mentally ill were no more rational and were just as deep-seated as if they had.

They would tolerate and even make light of mental illness until it became overt. Once admitted to a mental institution, however, the individual was marked, rarely visited or spoken of, and even when discharged was heavily stigmatized. It was impossible to develop in this community any interest in the nearby mental hospital, its staff, or its inmates. Their belief was that one must remain aloof from such matters, lest he be suspect himself. By maintaining aloofness, one proved his own sanity! The conclusion here was that "as a guide to health education, it is insufficient to assess popular beliefs in terms of their scientific accuracy; it is also necessary to know the functions they perform for those who hold them."[8] Obviously six months was too short a time to undertake so formidable a task as that presented by this community.

I use these examples as they are well documented and, though rather extreme, illustrate some of the complexities faced in health education. I hope it is evident that communication and persuasion in the health field are exceedingly difficult. Now to bring these references and other observations down to a usable program for the Medical Director and his health team in industry:

What To Do About It

IN ORDER to improve what the employee thinks and does about his health, it is obvious that we must know first what he thinks and why. If what he thinks is harmful to him or false, it must be changed or we will make no progress. To change beliefs and attitudes that may be based on long tradition, we must approach the problem carefully and skillfully. Whatever we do or say must be based upon understanding between our patient and us. Put simply, the other fellow must be convinced that we understand his viewpoint. This takes time and patience, but is essential before there can be agreement between us.[8]

Second, the other fellow must be in the presence of trusted authority. Understanding his viewpoint, and convincing him of that, goes a long way to enhance his trust. But in addition, he must have confidence in the doctor or the nurse with whom he is talking. Oftentimes this is done indirectly, not by the doctor or nurse, but by someone else in whom he has confidence and trust, and who has already been convinced of the authority and trustworthiness of the doctor or nurse. Thus, occasionally, we may use the foreman, as does the industrial safety engineer.

Third, what we are talking about must be demonstrated to the other fellow in ways that he can understand.[9] Physicians are often remiss in making their advice understandable. If anyone here doubts this, let him ask his nurse to interview the patient after the doctor has talked with him and repeat what the patient thought the doctor said. The physician, especially the industrial physician, should have ready access to visual aids, such as anatomical charts, slides which can be projected at the desk, and statistical graphs which can be readily comprehended by minds accustomed to the concrete rather than the abstract. He must assay the patient's level of comprehension and choose his words accordingly. Often he must demonstrate, observe, and then correct remaining wrong impressions.

Fourth, even as we might in similar circumstances, the other fellow needs time to think it over, to make some observations of his own, and often to discuss the new instructions with others, his wife, his foreman, or some trusted friend.

Fifth, the opportunity to do what is suggested must be made easy. If it is an appointment with his family physician, make it for him; if it is a diet, give him explicit diet lists and explain how it can be done within the limitations of his family budget; if it is a few days' rest, which he resists, call the personnel department and arrange it for him; if, on the other hand, it is more days off on disability which he does not need, call in his foreman and get his help in explaining how important it is for him to return to the job.

These are among the basic principles of modern health education. They require special skills in communication and persuasion, if we are to improve health habits and attitudes.

Increasing Importance of Health Education

AS MEDICINE progresses beyond the fields of environmental sanitation and acute infectious diseases now so nearly under control and moves toward the increasingly important field of the chronic and degenerative diseases, it becomes more and more essential that we develop skills in the field of health education. In industry this is primarily and importantly the job of the industrial physician and his health team, including his medical assistants, the nurses, the industrial hygiene engineer, and the safety engineer. There is no one else in industry who can do this job so effectively. The industrial physician and his team will do much better if they have the complete support and cooperation of the foremen, supervisors, superintendents, and managers.

The industrial physician's job will be made much easier: (1) If he has proper status with top management and is known to have their confidence and support. (2) If he earns a justified reputation for fairness, professional competence, good administration, and, perhaps most important of all, for understanding the other fellow's problems and beliefs. (3) If he has sufficient time and personnel to study and apply the workable principles we have heard today.

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Fundamental Factors in Persuasion

WILLIAM E. ROBINSON, President
The Coca-Cola Company

I AM HIGHLY complimented at the honor of talking to such a distinguished audience. In appearing before you, I'm mindful of the tremendous importance of your function in the industrial world. You are responsible for the physical well-being of hundreds of thousands of men and women who make up our miraculous industrial complex. This physical well-being is a basic necessity in the maintenance of worker morale at all levels. The results of your work are, of course, equally dependent on the professional proficiency with which you carry on your health programs, and the projection or the sale of your program to the largest possible number of workers within your responsibility.

It is on this second point that I will venture to talk. I will not presume to give you a precise formula. I doubt if there is any such thing—or, at least, one that could meet the varied conditions under which you work. Perhaps, however, if I tell you some of the thinking in our business about ideas and the communication of ideas, you may find in them some applications to your own situations.

I ask your indulgence in reference to my own business. Only in this way can I be practical; I think we can agree on a basic premise: the product, or service, in your case, must be as good as integrity, brains, research, and skill can make it.

Now I'm not going to take advantage of this occasion to tell you in detail about the meticulous and fanatical zeal, the immeasurable resources that go into the day-to-day maintenance and safeguarding of the uniform quality of Coca-Cola as a product. Without that as a basis, the money, and the time, and the effort engaged in persuading millions of people to drink Coca-Cola would not in the long run pay off.

Similarly, before *you* come to the business of selling *your* program, you must be sure that the program is sound, that its objectives are clear, and that it is valuable and beneficial to both company and worker.

Now—as I see it, there are five fundamental factors involved in the business of persuasion.

FIRST, there must be a definite need, physical or psychological, for the product or the service. Sometimes that need may be unknown to the public, in which case he or she must be made aware of it. Once the awareness is created, however, the product or the service must produce an honest benefit if the product or the business is to survive. Then it is necessary to create a favorable climate for the acceptance of the product or the service.

Over the years, The Coca-Cola Company has spent millions of dollars in advertising simply to create a climate for the acceptance of the product and the realization of its benefits. More often than not, the advertising does not mention the virtues of the product. It pictures the people who drink it, visualizes them in pleasant, agreeable circumstances, so that the reader of the advertising can identify himself or herself in such pleasant associations.

In creating an awareness of a need, The Coca-Cola Company at one time coined the slogan, "Thirst Knows No Season," with the result that the whole soft drink industry is now a year-round rather than a seasonal or warm-climate business.

Another example of creating an awareness of a special benefit was the use of the phrase, "The Pause That Refreshes"—which is the forerunner of the recent adaptation, "The Coffee Break."

The world-famous slogan, "The Pause That Refreshes," tied the product Coca-Cola to the important human need for the energizing rest-pause. It recognized the alternating current of "Work and Recuperate." The very heart beat of humanity is expressed in this idea. It recognizes the diminishing returns resulting from progressive fatigue—sometimes psychological as well as physical. It gives the consumer "a little moment for a big rest." While, as you doctors will recognize, such an idea has validity in its physical effect, the psychological benefit is also enormous.

Our search for dormant but unexpressed desires of our customers is continuous. We conduct continuing research into the habits of living of all segments of the population, noting changes in habits of living, work, inclinations and attitudes. This is for the purpose of anticipating the desires which ultimately become needs.

THE SECOND fundamental factor involved in the business of persuasion is believability—not plausibility, but believability. Believability begins at home. You must believe deeply in the validity and the importance of what you are doing. It has been said that the three hardest things in this world to do are: (1) climb a fence leaning toward you, (2) kiss a woman leaning away from you, and (3) sell something you do not believe in yourself.

MR. ROBINSON'S address was part of the Symposium on "Communicating and Convincing" at the Joint Meeting of all the participating Associations, INDUSTRIAL HEALTH CONFERENCE, Philadelphia, Tuesday, April 24, 1956.

Assured of your own faith in your work, you must use every resource at your command to have your customers or your workers share your own beliefs and your own enthusiasm. To do this, of course, another thing is necessary. That is, to understand thoroughly the effects and the benefits of your own product or service. It has been said, that you can't explain to others what you do not understand yourself.

In Coca-Cola advertising, for example, we try to stay away from the use of advertise-y words. They get to be trite. They get to be clichés which people read but never think about. They see them so often. Such words can become like the letter-box they pass every day and never know it's there.

It is undoubtedly difficult in your communications with your people to avoid the use of technical or medical words. While the layman may be impressed by your erudition and your understanding of words and technical terms he never heard of, they will leave him cold. Mysterious materia medica terms will only confuse. You must think constantly in terms of "him or her," and not "you or yours." You must say what you have to say in a language that doesn't talk down, but doesn't talk up either.

People learn slowly, and we get impatient. But if we take time and explain clearly in their words, we get results. An officer in our Company has a saying which has become his trademark: "People are down on what they ain't up on." He has spent his life getting people up on things so they won't be down on them. He knows that lack of understanding is the main ingredient in prejudice, or indifference. Regarding the difference between conviction and prejudice, he says: "Conviction is something you can explain without getting mad—but not prejudice."

Sometimes, in our advertising, we present people who look healthier, happier, handsomer than average people in real life. But, in doing this, we are always careful—in preserving believability—never to go beyond the bounds of what could be everybody's practical realization for themselves. Most people have an image, beyond themselves, to which they aspire. Indeed, some people have an image of themselves which they consider to be the real "me"—not including even aspirations.

In your work, you have a chance with your programs to elevate the aspirations of people with respect to their physical well-being and to help sustain those who perhaps may be a little oversanguine about themselves. But what you say, what you plan to sell them, must be within the bounds of believability. Under this heading of believability is the necessity for creating a climate —not simply for the acceptance of your programs, but the acceptance for what you say about them.

A medical industrial unit may be perfectly staffed— it may have a perfect program—but the management, and the workers, must believe in the people and the character of people who develop and maintain that program. You must create a friendly atmosphere and a friendly climate. You must establish an inclination to believability, so that what you claim for your program will be accepted with a minimum of doubt and skepticism. There is a Chinese proverb that says: "Dig a well before you're thirsty." And that is another way of saying: "Make friends before you need them."

That reminds me of a political story about "*friends*."

At one time in Mississippi, there was a law called, the Squirrel Law. It doesn't matter to you, or to me, what the law was all about—all we need to know is that half the people were for the law, and that half were against it. In a certain political year, all the candidates were on the stump selling the people on their particular qualities, abilities and virtues to fulfill the obligations of the office for which they were running. At a big rally, a young candidate was hitting a high point, when a heckler yelled out: "How do you stand on the Squirrel Law?" The bigwigs, his backers, were horrified. How could their young hopeful answer such a question satisfactorily? If he was FOR the law he lost half the votes. If he was AGAINST the law he lost half the votes. The young man leaned forward, and said: "I'm glad you asked me that question," and then he gave the right and only answer. He said: "I understand that half of my friends are for the Squirrel Law and half of my friends are against the Squirrel Law. Therefore it's important that you know exactly where I stand. I am for my friends."

I BELIEVE the third fundamental factor involved in the business of persuasion is that your material must be attractive. It must be positive. It must be affirmative.

In this day and age, it must be apparent to all of us that the "scare," or the "fear" technique has lost its potency.

One example that comes immediately to mind is the difficulty of getting people interested in Civil Defense—at a time when magazines and newspapers are full of the most frightening news of the devastating effects of an atomic attack.

At every medical convention, and in almost every issue of a newspaper or magazine, documentary evidence is presented to prove that cigarette smoking is an inducement to lung cancer. Yet the cigarette business continues prosperous. Some companies' sales are at an all-time high.

Insurance companies warn about the dangers of obesity, and magazines and newspapers are packed with articles on diets warning people away from starches and fats. Yet it is nearly impossible, in any restaurant in the United States, to find a menu that doesn't include potatoes. Certainly potatoes don't outrank everything else in food taste, and yet they're included in more entrees than any other one given kind of food except bread and butter. It must be that people like to eat what they're not supposed to eat. Either that, or they are so confused about what's good or bad for them that they just give up.

In our business, every once in a while, some misguided dentist will advise a mother not to let Johnnie have any more soft drinks because of the sugar content. Johnnie, who is using up a lot of energy and needs sugar, will then proceed to

drink more soft drinks than ever, just because they're forbidden—or he'll get that sugar somehow even if he has to eat it in the lump state.

We do a considerable amount of research in this field, and we do try to have authorities develop and disseminate the facts. We are, also, on occasion, concerned with the obesity matter, because some of the diets fresh from Hollywood forbid soft drinks but include grapefruit. That makes it necessary for us to point out that there are fewer calories in a bottle of Coca-Cola than in half a juicy grapefruit—without sugar sprinkled on top of it. That is an image that people can readily understand—much more so than an involved discussion on a sound nutrition program which would include Coca-Cola with a good diet.

Some of the food products and soft drinks that contain calories, make the mistake of advertising that they have fewer calories than something else. It seems to me, that this puts the accent on the negative rather than on the positive.

In your own work, I think your programs can become more attractive, positive and affirmative by talking about the high percentage of good health among your people, rather than about the incidence of poor health and the dangers of disease. It seems to me your programs have a much better chance of success, if they emphasize the joys, the pleasures and the satisfactions of living in good health, rather than the trials and tribulations of illness.

If, for example, you should have a good score on your next periodic physical examinations, it might be a good idea to brag a little bit on the good health of the workers in your plant or industry. Some people like to complain about their aches and pains. Doctors with the charming bedside manner may cater to this. But, in your field, you should encourage bragging about *good health.*

I definitely believe that those who enjoy sickness are in the minority. Make good health fashionable. A handsome man is a man in good health. A beautiful woman is a healthy woman.

THE FOURTH fundamental factor involved in the business of persuasion is *repetition.* When you have completed your program and put down in explicit terms the benefits for management and the workers—and when you have built another program for the indoctrination of both in your procedures, then you must begin to assume that a single telling of the story, however eloquent, will be only the first drop in the bucket. It is here that repetition becomes your greatest necessity.

To be effectively repetitious requires real skill. If you tell people the same thing in the same way under the same circumstances, they'll soon get tired of it and it will fail to register. You must learn to say the same things in different ways, in different circumstances—but always in the language your people will understand. Ways and means of achieving this technique will often be revealed in psychological studies of the people with whom you work—psychological surveys to ascertain their over-all reactions to their fellow-workers, to their neighbors, to management, and to you. As they change their habits of living and thinking, you will become familiar with the things with which they are familiar and the things they understand. And your technique for repetition will, of course, always be in tune with this knowledge.

THE FIFTH fundamental factor in the business of persuasion, as I see it, really flows out of this necessity for repetition. It is the need for variety in the presentation of your product, service, or program.

Variety here, however, is meant to be used not simply for the purpose of repetition but for the purpose of having your appeal meet the different interests, motives, hopes, and aspirations of the people with whom you deal.

For example, we may prepare a series of advertisements designed solely to reach the housewife who purchases Coca-Cola at her grocer's. Another series of advertisements may be directed to teenagers who are large consumers of soft drinks. Another series of appeals may be developed to get people to drink Coke with meals. Another for parties and picnics.

Similarly, it seems to me, that your own programs must have a variety of approaches—some calculated to reach men, some women, some both men and women, some the workers, some the worker's family—the young and the middle-aged. To achieve effectiveness in the variety of your indoctrination, you must put your subjects in the picture. They must identify themselves by their sex, age bracket, condition of living, or whatever. It's what we call again the *you* appeal.

In your efforts to reach various segments of people, it will never, of course, be possible to achieve 100%. There will be eccentric and fanatical fringes that will remain unresponsive to your best efforts. For example, I don't know what you do about the old horseplayer who, for the first time in his life, really felt sick. His wife begged him to go to the doctor. When he returned, an hour later, she asked him what the doctor said. Her husband replied, "I don't know; I didn't see him." She asked, "Why not?" He said, "I got up to the door and it said 'DR. SMITH—11 to 2' and I didn't like the odds, so I thought I'd come home."

Today throughout business and industry much management attention, energy, and money are being expended in the development of sound personnel relations and personnel development programs. Today the inclinations, aptitudes and potentialities of the individual are being studied and directed into channels in which he can produce with the greatest efficiency and with the greatest possible satisfaction to himself. In this, too, lies the hope for the constant improvement and the expansion of the capacity of the individual so that as he grows the company grows.

The climate, the environment, the circumstances in which people work are being studied as never before in order to develop initiative and to nourish ambition and achievement. The extent

of the success of these programs must depend, in large degree, on the physical well-being and the health of the individuals involved. Men and women in poor health cannot respond to such programs and cannot contribute to their success. These forward-looking programs must be contingent upon or be integrated with sound medical and health plans. In many instances, therefore, you are the keys to the degree of success attained in the development and advancement of the individual at all levels, whether he be a manual worker or an executive.

No company, as such, stays sound and strong on its own. No corporation, regardless of its inheritance, grows automatically. The soundness and the strength of a business depend on the soundness and strength of the individuals who make it up—the good health as well as the skills of the individuals who compose it. The growth of the corporation will, in the long run, be in direct ratio to the growth of the individuals who carry on the work at all levels.

If this be true, you have an enormous responsibility, individually for the strength and growth of the companies you represent, and collectively for the strength and growth of our whole industrial complex.

This is a great challenge as well as a great opportunity, and one that is with you constantly every hour of the day.

Contempt for the Mass Mind

THE HISTORY of our effort to educate an entire population constitutes a unique experience. The schools were somewhat overwhelmed by it. Unfortunately, we have tended to emphasize the problems more than the opportunities. Furthermore, there is involved in this what I regard as one of the grossest misunderstandings of democracy—that is, many of us think democracy should provide equal training as well as equal opportunity. Such attitudes have tended in recent years to submerge the most capable of those among us. *Q. Is not the averaging out of all capacities a necessary part of determining the level at which mass communication must be pitched?* A. We make some serious mistakes in that connection. For example, toothpaste is toothpaste is toothpaste—if I may paraphase Gertrude Stein's famous poem. Yet, one would suppose that miracles were being performed each month—at least, according to the advertising claims. "Behold, I make all things new, including your teeth!" This is, in a certain sense, contempt for the mass mind. You often get in education the same type of contempt, though unspoken. *Q. How is this contempt expressed?* A. There is the temptation to underestimate the intelligence of our people. For example, the Army Alpha Test in the First World War and the Army General Classification Test in the Second War led to such gross statements as this: The average soldier has the mind of a 12-year-old. Well, there isn't an average soldier in the first place, and there isn't an average 12-year-old in the second place. So you have two false averages to work with. What such misconceptions hide is that we actually had the most rapidly trained and on the whole the most resourceful and efficient army that was ever built in a like period of time by any civilian society.

—From an Interview with HENRY M. WRISTON, President Emeritus, Brown University, entitled "Can We Have Both Mass and Quality?" in *Challenge* (The Magazine of Economic Affairs) May, 1956.

Motivation in Health Education

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MODERN science is not satisfied with the philosophical approach to the solution of its mysteries, including the mystery of human behavior. So tests and questionnaires and other devices have been evolved to try to find out really why people do things. As a base for our conclusions, we look for evidence which is aside from our own subjective analysis, as well as aside from the subject's own analysis of his own reasons.

Again and again it has proved to be unsatisfactory to ask people what their motives are. Answers to such inquiries are unreliable. Few people are capable of analyzing their own motives, and even when they understand them they may be unwilling to admit them. They deceive themselves as well as the examiner. These deceits are unconscious. If cornered they may say "I don't know why I did such a thing." Often, the subject who is being examined will base his reply on what he thinks will do him the most credit. For example, if you ask a selection of people why they read certain comics regularly, they would not admit (perhaps they do not even realize) that it is for the sheer excitement of crime, sex, violent murder and sudden death which such comics portray. They would tell you they read them because they are funny, yet it is obvious that very few comic strips are funny. Or they will tell you they read them because they give an insight into human nature, they're educational, or they will offer some other reason that seems creditable.

Various disciplines have evolved different theories of motivation. The psychiatrist, for instance, points out that with respect to personal health there is a conscious ambivalence. It is not correct to assume that everybody wants to be well. People often cling to their disabilities, sometimes consciously, more often unconsciously. The psychiatrists point out that sin and illness are linked in thought, noting that the words for pain and penalty come from the same root. To be ill, therefore, eases the conscience. It gives a sense of having paid for wrongdoing. Kubie says, "It is an everyday experience in psychiatry that depressed patients tend to lose their depressions when they suffer physical pain, or break a leg or fall ill, only to lapse back into a guilt-laden depression when they recover from their physical ailment."

Then, too, as children, we learned that there was satisfaction in being ill. We had our mother's sympathy. We got more attention than our brothers and sisters. We didn't have to go to school. These early experiences, of course, tend to determine our attitudes thereafter, even though we may have forgotten all about them.

Our system of childhood rewards has had a great deal to do with motivations in health. We say "you can have ice cream if you eat your spinach," but we never say "you can have your spinach if you eat your ice cream." What better way could there be of prejudicing one against spinach? There is little emphasis on the possible enjoyment of the thing itself, no stressing that spinach tastes good, only that it is good for you. No wonder most of us don't like spinach. We eat it reluctantly as a penalty for our sins.

TO COUNTERACT these attitudes, health educators have tried to instill new attitudes which inflate the values of health. They have stressed the allure of getting big and strong, beautiful and successful. These arguments have had but a limited appeal. In attempting health education, we cannot proceed on the assumption that everybody wants to be big and strong. Indeed, the Bible teaches that "the meek shall inherit the earth."

The anthropologist approaches the subject of motivation from another angle. He stresses the influence of culture in determining motivation. For example, Dr. Mead and others have pointed out that in the northeastern United States, our culture is based on Puritanism. This tradition accounts for the common attitude that if something tastes good or feels good it is probably bad for you, whereas if it is unpleasant it is good for you. The asafetida bag around the neck and the sulphur and molasses spring tonic owed their potency, no doubt, to this concept rather than to any controlled experiment. Dr. Mead further points out that in the Southeast where the culture derived not from the Puritans but from a cavalier stock, these views do not hold to the same extent. Any of you who have a tradition of upbringing that stems from New England will have heard many times that hot bread is not good for you. It is better when it is slightly stale (and, therefore, doesn't taste so good). This view does not prevail in the South. There, hot breads are preferred. They taste better and are, therefore, better for you than stale bread. The Californian insists on enjoying health outdoors. In the East, until recently, sitting in the sun was thought sinful. People should be working.

HOMER N. CALVER is Editor of the *Health Officers' News Digest*, New York. This paper was presented at the Third Public Health Workshop on Dental Care in Industry, at Hotel Statler, New York City, January 21, 1955; was published in "Health Education and Preventive Dentistry in Industry," Volume 3, Limited Edition, First District Dental Society of the State of New York; and is published here by special permission.

In my own work, which has to do with the promotion and acceptance of paper cups for the drinking of beverages, we have an enormous problem in changing a culture pattern. Most of you will say that you do not like to drink out of a paper cup and will advance all sorts of reasons for your position. You will say that you don't like the taste when tests show that there is no more a paper taste than there is a glassy taste. You will say that they leak, ignoring the fact that sometimes glass and crockery are cracked and leak also. If pushed, you will perhaps accept the paper cup for the dentist chair but not the dining table. Now in this connection note the attitude of the Russians. They drink tea out of glasses, and it would be presumably beyond their imagination to drink tea out of a china cup. An Englishman would take the opposite view. Experiments by Kurt Lewin showed that children have a much more ready acceptance of paper service than do adults, pointing out that they have had fewer years to become habituated to glass and crockery. His experiments also showed that continued use of paper service results in a more ready acceptance of it. From such experiments, the dentists may conclude that the more one visits the dentist, the more he will continue to visit the dentist.

The anthropologist emphasizes that people are motivated primarily by their concept of what is the thing to do. If it is part of the family and community culture to brush the teeth, teeth will be brushed, because no one likes to be odd or unusual. Where the culture is not for tooth brushing, all sorts of arguments can be advanced as to why brushing the teeth is probably bad for one. As an example of such attitudes, we found during the war when we were developing large health programs in South America that there was a tribe of Indians in the Andes which could not be convinced of the desirability of taking a bath occasionally. These Indians pointed out, with entire conviction on their part, that the body was like a tree which developed a sort of protective bark. If this bark were washed off the individual would die, just as a tree would die if the bark were peeled. If you doubt the power of culture in determining action, visit the campus of any midwestern college. You will find not one freshman co-ed in 10 who is not wearing white bobby sox and white shoes. The question of how customs and cultural habits arise is another subject.

The educator approaches the problem of motivation in another way. He insists that there must be a felt need. The person himself must see his problem for himself in his own light. It does no good to tell him he has a problem when he doesn't feel he has one. Furthermore, he is more likely to apply the remedy if he has evolved the idea of the remedy for himself. Everyone is reluctant to accept unfamiliar remedies for unrecognized conditions. This has nowhere been better illustrated than in the various community campaigns for fluoridation of water. Universally these campaigns have been attempts to impose an unfamiliar remedy on a populace which did not recognize there was any problem in the first place. No fluoridation campaign that I have ever heard of though there may have been some, has ever started with the idea that the community ought to take a look at its teeth. True, there have been community surveys of "dental defects." However, "dental defect" does not mean the same thing to a layman that it does to a dentist. I may have "bad teeth," have "lost some teeth," or have "a pain in a tooth." I don't have "defects." Only other people are defective. I have gotten along pretty well so far anyway with the kind of teeth I have and I don't see why I should do anything about it until I am faced with the downright problem of continuing to suffer with pain. Then the obvious answer is to have all my teeth out and get a set of false teeth.

It is particularly difficult to get over the idea of prevention, especially in fields with which people are not familiar. The farmer may cover a haystack or wagon to keep it from getting wet in the rain, but there just is no carryover from this idea of prevention to the idea that he or his parents might have done something which would perhaps have prevented him from losing his teeth.

So even before fluoridation of the community water supply is mentioned, an effort should be made to establish two ideas: (1) Bad teeth are not good. (2) Bad teeth can be prevented.

But most campaigns start with the unfamiliar remedy of fluoridation for a condition which is not recognized or which no one had thought of preventing. In my opinion, there are only two ways in which fluoridation of most public water supplies can be accomplished:

1. There is a swift autocratic way of putting the fluorine in the water either with or without telling the people it has been done. In most communities that is the way chlorination of water supplies was accomplished. It is an indefensible procedure, from the democratic point of view, but wholly defensible on the basis of scientific evidence, and, furthermore, it is the way a great proportion of our public affairs is conducted.

2. The other way is slower but has the advantage of democratic approach with a bonus of health education. This way is to develop a campaign of interest in the problem of decaying teeth, gradually developing the idea that much of such decay might be prevented. When this has been thoroughly done, the people themselves may be ready to move in to an exploration of the various ways in which decay may be prevented. Such a campaign, skillfully handled, will lead them to conclude for themselves that fluoridation is the best answer.

Most fluoridation campaigns have begun and have been carried along in between these two extremes with a modicum of autocrat action, (The decision that fluoridation is the answer is, in itself, an autocratic decision) and a modicum of education regarding fluoridation and fluorides which tends to make everyone forget what the problem was in the first place.

Our religious leaders approach the problem

of motivation from still a different angle. Most religions with which we are familiar in this country, approach the idea of motivation from the simple concept that we are inherently "sinful," and only by prayer or penance may we atone for our sins. Whether we are deeply religious or not, the feeling is ingrained in most of us that our pains and failures are to some degree, at least, the result of transgressions of the rules laid down by the spiritual or incarnate founders of the religion we have been more or less taught to follow. Viewed from the standpoint of religion, one of the strongest motivations is the desire to escape from pain here and hereafter.

The salesman roams the field. He reaches out for whatever motivations he thinks can best be used to sell his products. He appeals to fear (as does the religious leader). He appeals to social acceptance (the anthropologist's viewpoint). He appeals to pride, self-indulgence, security. Furthermore, he uses these motivations skillfully and successfully. Health educators could learn much from the methods of the salesman. For example, it is common practice now to drink orange juice, but this practice derived in small part from the teachings of the health educator that orange juice was good for you. Our habits in this respect, I believe, were in much greater degree determined by the energetic sales campaigns of the citrus fruit growers and the improvement in packaging their product.

A great many scientists endeavor to motivate people by the use of statistics. Much as they may appeal to the scientist in his field, experience has shown again and again that outside of one's field they have little appeal. In the first place they are often hard to understand; second, they are impersonal (they do not apply to me); and, in the third place, most people distrust them. Even dentists who may trust and be motivated by dental statistics, will fail to trust or be motivated by financial statistics or statistics of highway accidents when they buy a stock or drive a car.

So it is in each field. The lawyer stresses legal motivation—the doctor, physical—the banker, financial. Those trained or experienced in each area tend to assume that other people are motivated by the same knowledge and considerations which he has. Each one has confidence in his own analysis or motives, and, for his purposes, he may be right.

IF THERE were time, one might attempt to correlate these different approaches to find a common denominator if there is one. Since there is no time, perhaps you will permit me to conclude with a few observations with respect to motivations in health education:

1. Merely imparting facts will not always motivate to action. Furthermore, the imparting of facts about a field generally will not result in some specific action. For example, there has recently been an extensive campaign to encourage people to buy stocks. The steady rise of the stock market has given this campaign a good deal of support. However, when it comes to buying stocks of a particular company, we run into all sorts of motivations. They are bought on hunches, tips, fragmentary information, but very seldom with a knowledge of the products, finances, and management of the company concerned. We can carry on general campaigns to persuade people to see their dentists at regular intervals, but these campaigns fall short unless we can tell people how to select a dentist. This is perhaps one of the gravest problems for the dental and medical professions. Some of the professional societies are trying to do something about it, but it is still generally true that the average person can select a pair of sport shoes with greater wisdom than he can select a surgeon to perform a vital operation.

2. It seems clear that the individual must recognize the problem for himself before he is motivated to do something about it, and here it is important to remember that he sees the problem differently from the way you do and may have a different solution for it. Also, here it must be remembered that people are subject to many different motivations at the same time, and each individual will, for himself, decide his own values. For example, I remember some years ago seeing an intelligent looking young man on a street in downtown New York selling pretzels from a basket. He was motivated to sell pretzels presumably to earn money to support himself. Perhaps the pretzel business then was better than I thought it was, and he may have been doing very well. But I could not escape the feeling that if he had shaved off his beard, and changed his habit of dress, he might have put himself in the way of earning an even better living. However, it was not for me to tell him this thought of mine. In the environment in which he lived, it was, no doubt, more important for the satisfaction of his ego, his position in society, and perhaps for his future career, that he have a distinguished beard. For him it was a choice, perhaps an unconscious one, between beard and dollars. I know a young man who feels it is more important for him to have a foreign sports roadster than it is to get his teeth fixed. So in attempting to motivate people to better dental health, one must constantly keep in mind the other person's point of view. Motivation of a worker in respect to dental hygiene may be quite different from the motivation of the employer. The motivations of both may be quite different from the motivations of the dentist.

3. It seems clear that in health education at least, people are more likely to be motivated when they participate in making a decision. Early in the war, a vigorous campaign was put on by the meat packers to encourage people to buy more liver and kidneys—which you may remember then sold at a very low price. The campaign was not going very well until under the direction of a psychologist and anthropologist groups of women were brought together to discuss the problem of food budgets and analyze for themselves how to get the most food for the least money. These women for themselves concluded that these cheaper meats were excellent, and over the years

you know now what has happened to the price of liver.

4. We may conclude that motivations are determined by many factors. Culture patterns, patterns of family living, community attitudes, social acceptance, religion, economic level, all affect motivations. Sex and age are important factors in motivation. Different sexes feel different needs, and different needs are felt at different ages. At one age conformity is important, and at another it is less important. Past experiences are important factors in motivation, especially our childhood experiences which we have forgotten. We forget the simple analysis of the dental problem couched in the statement "I went to the dentist once and he hurt me. I'm not going back again until I have to." We are too much inclined to make assumptions relating to motivations based on our own experience rather than on the experience of others. Finally, we must not overlook the fact that our mood at the time, particular day, hour, week or month, may determine in a large degree, our motivations regardless of all other factors.

FINALLY, I have touched only by indirection on the whole subject of habit and motivation. Consideration of this problem would take more time than we have. But it might help us to determine whether we should be more concerned with health education or more concerned with habit training. At least, we can conclude with the thought that good dentistry in the United States has greatly changed the attitudes of people, particularly in urban areas and the upper income brackets, so that they now take for granted the need for good dental care. Their motivations in this respect have been established by experience.

The Procession of Life

ON THE other hand, here come whole tribes of people whose physical lives are but a deteriorated variety of life, and themselves a meaner species of mankind; so sad an effect has been wrought by the tainted breath of cities, scanty and unwholesome food, destructive modes of labor, and the lack of those moral supports that might partially have counteracted such bad influences. Behold here a train of house painters, all afflicted with a peculiar sort of colic. Next in place we will marshal those workmen in cutlery, who have breathed a fatal disorder into their lungs with the impalpable dust of steel. Tailors and shoemakers, being sedentary men, will chiefly congregate into one part of the procession and march under similar banners of disease; but among them we may observe here and there a sickly student, who has left his health between the leaves of classic volumes; and clerks, likewise, who have caught their deaths on high official stools; and men of genius too, who have written sheet after sheet with pens dipped in their heart's blood. These are a wretched, quaking, short-breathed set. But what is this cloud of pale-cheeked, slender girls, who disturb the ear with the multiplicity of their short, dry coughs? They are seamstresses, who have plied the daily and nightly needle in the service of master tailors and close-fisted contractors, until now it is almost time for each to hem the borders of her own shroud. Consumption points their place in the procession.

—From "Mosses from an Old Manse," (page 292), by NATHANIEL HAWTHORNE. Houghton, Mifflin & Company, New York, 1900; Original Circa 1838.

Surgery of the Biliary Passages

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STONES MAY BE present in a gall-bladder that functions well without symptoms of gall-bladder disease. The recognition and removal of such a gall-bladder in a patient who can tolerate surgery will avoid the possibility of gallstone colic, symptomatic acute or chronic cholecystitis; hydrops, empyema or gangrene of the gall-bladder; perforation with diffuse or localized peritonitis; obstructive jaundice, cholangitis, hepatitis, biliary cirrhosis; gallstone ileus; pancreatitis; symptomatic cardiac irregularities, or carcinoma. When any of these complications or sequelae of gall-bladder disease is present, surgery appropriate to the nature of the local disturbance and the condition of the patient will be indicated. Anatomical distortions due to pathologic changes must be recognized when surgery is undertaken.

Patients who submit to surgery for removal of the gall-bladder should be assured of recovery from the operation and freedom from symptoms. This is the responsibility of the surgeon. The success or failure of this venture depends on four essential matters.

1. *Diagnosis*: The presence of stones in the gall-bladder is not positive evidence that gall-bladder disease is responsible for the patient's complaint. Neurologic, hematologic, arthritic, cardiac, pulmonary or other abdominal conditions may be responsible for symptoms that simulate those of gall-bladder disease. Removal of the gall-bladder without recognizing other diseases that are responsible for symptoms is not likely to give relief.

2. *Adequate Surgery*: Incomplete removal of a diseased gall-bladder or retention of a large segment of the cystic duct may be responsible for recurrence of symptoms. Failure to explore a common duct containing stones which obstruct or failure to establish adequate patency of the ampulla due to an unrecognized carcinoma of the pancreas or adjacent viscera allows for persistence of symptoms or the development of new and more serious symptoms.

3. *Avoidance of Accidents*: Injuries to blood vessels, large or small, result in hemorrhage or liver necrosis; and, injuries to the hepatic or common ducts, causing leakage of bile or obstructive jaundice, may be followed by prolonged disability or death.

4. *Prevention of Complications*: Respiratory, vascular, neurologic, and other complications incidental to anesthesia or inadequate pre-operative and postoperative management prevent complete recovery. The postoperative incisional hernia may be more troublesome than the gall-bladder disease for which surgery is done.

Anatomical factors play a role in each of these.

A knowledge of the anatomy involved is most helpful. Anatomic hazards are present from the moment the initial incision is made until the last suture is placed in the closure of the wound.

EXPLORATION PRECEDING GALLBLADDER SURGERY

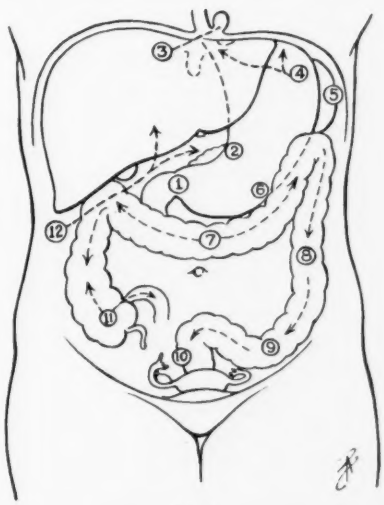

Fig. 1.

Abdominal exploration done before elective cholecystectomy may reveal other causes for symptoms. 1. Antrum, pylorus, and first portion of the duodenum, anterior and posterior walls. 2. Lesser curvature lesions. Ulcers or tumors. 3. The hiatus hernia. 4. The fundus of the stomach. A silent area which can accommodate a large lesion. 5. The spleen. Neoplastic inflammatory or ulcerative lesions in the following locations: 6. The greater curvature of the stomach. 7. The transverse colon—hepatic and splenic flexures. 8. The descending colon and left kidney. 9. The sigmoid and mesosigmoid. 10. The rectosigmoid and rectum. Uterus and adnexae. 11. The cecum, appendix, ileum and jejunum. Ascending colon and right kidney. 12. The hepatic artery, common duct, pancreas, duodenum and liver.

Presented at the Sixty-Eighth Annual Meeting of the AMERICAN ASSOCIATION OF RAILWAY SURGEONS, Chicago, April 10, 1956.

The Abdominal Wall Incision

ANATOMIC factors related to the abdominal wall incision are its size and the degree of exposure it affords. The incision should be long enough to permit a wide exposure of the field. This will allow (1) exploration of the neighboring abdominal viscera; (2) visualization of the anatomy concerned in the operation; and (3) manipulation necessary for removal of the gall-bladder, probing of the ducts when necessary, and control of bleeding that may be due to accident or disease. Injuries to the ducts and blood vessels frequently are due to inadequate or faulty exposure, but many patients fail to make complete recoveries with relief from symptoms because of inadequate exploration. In spite of what is regarded as a complete pre-operative examination some intra-abdominal pathologic conditions which produce symptoms or which will interfere with recovery are not detected before surgery is done. Roentgen studies, too, are not always revealing. However, when the abdomen is opened there is an opportunity to make a visual or palpatory exploration to detect significant pathologic conditions which can be corrected immediately or which indicate the need for special postoperative medical care or further surgery. Thus the patient is not dismissed with an unrecognized existing or impending cause for complaint (Fig. 1).

Whether the surgeon prefers the oblique, transverse or longitudinal incision is not as important as the size of the incision (Fig. 2). With satisfactory illumination of the field and gentle, careful retraction by an assistant who is aware of his responsibility not to injure the tissues, most of the accidents that actually occur in this field can be prevented. Incisions adapted to the contour of the abdomen will take advantage of the good features of each and avoid the disadvantages.

A common anatomic hazard in gall-bladder surgery is the development of a postoperative incisional hernia. This may be due to faulty healing from one or several of a variety of causes or to malocclusion of the layers of the abdominal wall. While the causes of faulty healing are well known and can be guarded against by proper nutrition, prevention of infection, and avoidance of distracting forces on the suture line, the anatomic factor of complete and accurate closure of the posterior sheath of the rectus muscle with its transversus muscle, transversalis fascia and attached peritoneum needs constant re-emphasis (Fig. 3). Failure to suture this important layer owing to negligence or inadequate abdominal wall relaxation is the most common reason for development of a postoperative hernia. Attention to the details of closure is well worth whatever additional time is required to restore the integrity of the abdominal wall. Suture materials should hold the tissues in approximation until healing is well established. Nonabsorbable sutures for fascial closures are more certain to do so.

A plane of anesthesia sufficient to relax the abdominal musculature is needed, and closure of the incised wound should not be attempted until this is established. At this stage some anesthetists

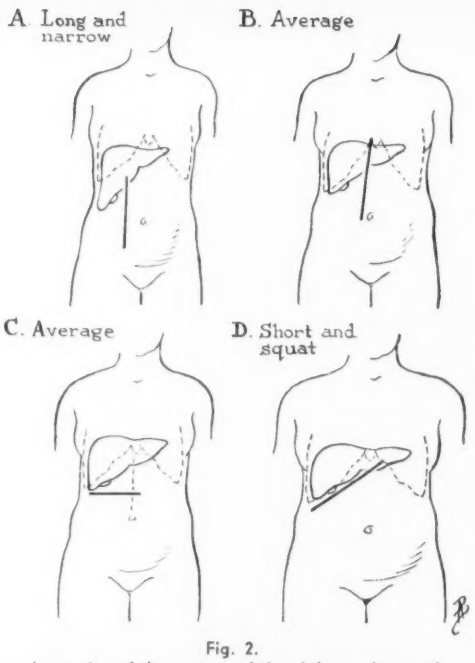

Fig. 2.
Inspection of the contour of the abdomen frequently suggests the type of incision most likely to afford the widest exposure consistent with the requirements for the surgery contemplated.

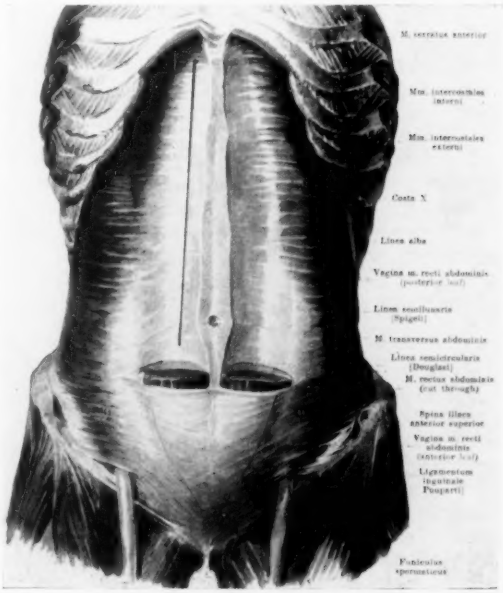

Fig. 3.
The transversus muscle retracts laterally when its aponeurosis is incised. Repair of this layer is not likely while the patient strains. Thus relaxation of the muscle is necessary before abdominal wall closure is attempted. Incisions extending below the linea semicircularis are difficult to close because of the absence of the aponeurosis. The lower end of this layer need not be incised to the same extent as the anterior sheath of the rectus muscle.

use muscle-relaxing agents to facilitate the closure. This is useful, but the hazard of decreased respiratory excursion and anoxia warrants constant vigilance to make certain that the patient can breathe well in the immediate postoperative period. A clear airway, with adequate oxygenation of the blood by artificial pulmonary ventilation, is a requirement until the patient regains control of respiration and is out of danger.

Blood Vessels and Ducts

ACCIDENTS involving blood vessels and ducts may be immediately fatal or result in prolonged disability before recovery takes place. In some patients recurrent disabling episodes ultimately result in such changes in the liver that recovery is impossible. Thus one small error may change a prospective good result into a failure, and a patient who might have enjoyed good health is committed to a long period of disability. The prospect of one or more hazardous procedures to correct an injury that may shorten the life of the patient should discourage the surgeon from working blindly in an obscure field. Any avoidable disability is too high a price to pay for a small, inadequate incision with inadequate visualization of the field. A distended gall-bladder is an anatomic hazard. It obscures the ducts and vessels, interferes with exploration of the regional anatomy and adds to the danger of its removal. The distended gall-bladder should be aspirated of its fluid content and emptied of its stones. This aids in visualization of the field and avoids the forceful emptying of stones into the common duct. To facilitate further exposure of the ducts and vessels the neck of the gall-bladder is elevated and the cholecystoduodenal ligament is opened. The peritoneal edges of this opening are separated with care until sufficient exposure of the extraperitoneal space in which the ducts and vessels lie is obtained. Additional mobility of the neck of the gall-bladder may be obtained by incising the serosa and subserosa on the lateral aspect of the gall-bladder and elevating the neck of the gall-bladder from its bed in the liver. The common, hepatic and cystic ducts may now be inspected and the cystic artery or arteries isolated.

Bleeding from torn tiny vessels is controlled by the application of a warm moist pad with mild compression until a dry field is obtained. This is a requirement if the danger of accidents is to be avoided.

Cystic arteries vary in number from one to four. All of them should be ligated when it is established that they enter the gall-bladder. In an obscure field the closer to the gall-bladder vessels are ligated, the less is the likelihood that hepatic vessels will be ligated or injured.

The gall-bladder is held to the liver not only by its serosal covering which is continuous with Glisson's capsule, but also by a cystic artery. This is demonstrated by the ease with which the gall-bladder is removed following severance of the cystic artery. During surgery lateral traction on the neck of the gall-bladder causes the cystic artery to become taut. It can now be palpated as a "wire" and thus identified. It is usually in association with a lymph node which may obscure the view. Unless care is taken the vessel may be torn or mistaken for a fibrous band and cut with resulting hemorrhage. This accident is avoided by ligation of the cystic artery soon after its exposure with severance close to the gall-bladder. This permits greater mobility of the neck and cystic duct with a lesser risk of hemorrhage.

Fig. 4.
Compression of the hepatic artery to control bleeding.

The cystic artery or arteries arise from any branch of the coeliac axis of the aorta, the superior mesenteric artery or the aorta itself. While most commonly the cystic artery comes from the right hepatic artery, its origin from a large vessel at some distance from the gall-bladder may subject it to injury during the act of retraction of the viscera adjacent to the gall-bladder. This further emphasizes the need for care in the initial phase of cholecystectomy when the viscera are exposed and the field is opened to view. Medial and inferior displacement of the duodenum with retraction by a hand or instrument may compress a torn vessel arising from the superior mesenteric artery and prevent bleeding. Following removal of the retractor the operative field may fill with blood and prolong the procedure, or bleeding may occur in the early postoperative period following closure of the abdominal wall and result in shock.

There is particular danger when a vessel is cut or torn and retracts out of the field. The accumulation of blood obscures the ducts and vessels and application of a forceps in this field in an effort to control bleeding is a frequent cause for injury to these structures.

The insertion of the left index finger into the foramen of Winslow makes possible compression of the hepatic artery with the left thumb (Fig.

4). This controls the bleeding. It is now possible to aspirate the blood and irrigate the field with isotonic salt solution. Removal of this fluid by suction, clears the field. The surgeon now can see the extent of injury and secure the bleeding point.

The Ducts

THERE are marked variations in the length of the cystic duct. The extremely short ones are less than a centimeter in length and favor injury to the hepatic and common ducts. The mildest traction on a gall-bladder with a short duct favors "tenting" of the other ducts, so that the application of a clamp occludes more than the cystic duct. Other cystic ducts are as long as the gall-bladder itself. Frequently, a long cystic duct and the hepatic duct lie side by side for one, several or many centimeters before they unite to form a common duct. It is less hazardous for the patient to have the contiguous portion of the cystic duct remain, for complete excision of a cystic duct attached to the hepatic duct may be more injurious to the long hepatic duct, duodenum, or pancreas.

It is better to avoid clamping the cystic duct in almost all instances. Exposure of the duct can be more readily done with careful, blunt dissection, using a fine tipped Mixter forceps or any of its modifications and applying a ligature directly to the cystic duct at right angle to its axis in full view of the common and hepatic ducts.

The cystic duct has usually the narrowest calibre of all the extra-hepatic ducts, and its surface is "corrugated" or irregular owing to small, leaf-like projections within its lumen, extending in a spiral throughout short ducts. These are the valves of Heister, an embryological formation usually not found in the distal end of long cystic ducts. These anatomic characteristics of the cystic duct are useful in establishing its identity on sight.

Variations in the mode of union of the hepatic duct with the cystic duct to form the common duct, the occasional union of the cystic with the right hepatic duct, and the rare entrance of the right hepatic duct into the gall-bladder warrant careful inspection before any duct is ligated and cut.

The location of the hepatic duct is constant. It lies at the bottom of the quadrate lobe of the liver. This lobe is bounded by the gall-bladder fossa on the right, the round ligament on the left, the anterior margin of the liver superiorly, and the hilus where the larger vessels enter and the hepatic ducts leave the liver. If this anatomic fact were more generally known, serious injuries to the hepatic duct could be avoided. The duct lies behind a layer of peritoneum. The thickness of this peritoneal layer varies with the degree of chronic peritonitis associated with the biliary tract disease. Immediate exposure of the quadrate lobe by traction on the round ligament toward the left and displacement of the body of the emptied gall-bladder laterally helps to visualize the danger zone in biliary tract surgery (Fig. 5).

Pathologic factors determine the need for exploration of the common duct and are not the province of this article. However, as a safeguard in exploration, aspiration of bile is an assurance that the portal vein has not been mistaken for the duct.

Mobilization of the duodenum by incision of the parietal peritoneum on its lateral margin facilitates manipulation necessary to explore the duct, expose the ampulla of Vater, or effect repair of injured ducts.

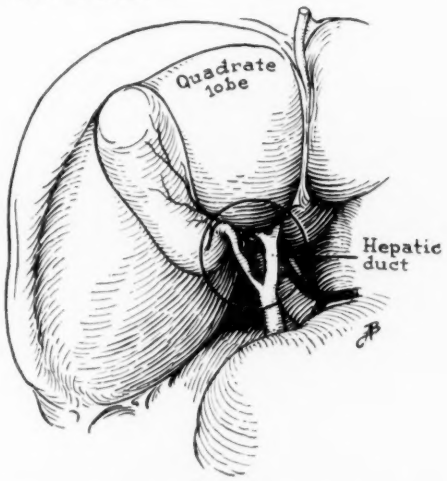

Fig. 5.
The quadrate lobe with exit of hepatic ducts from its base. Note the cystic artery. This vessel is identified by palpation when made taut by traction of the gall-bladder laterally.

Fig. 6.
Elevation of right diaphragm due to accumulation of bile in right subphrenic space following cholecystectomy with no provision for drainage. Complete recovery following right subcostal incision with suction drainage.

Bile leaking from the wound after operation may be due to injury of an accessory duct rather than improper ligation of the cystic duct. This can occur in the simplest case when the liver is dislocated out of the abdomen by rotation. Short accessory ducts are torn off. The hazard of injury to an aberrant duct without knowledge that it has been torn or evulsed is present in every case.

Some of these ducts are narrow in calibre and may be injured during cholecystectomy. Subsequently a large amount of bile may accumulate in one or several of the subphrenic or subhepatic spaces (Fig. 6).

Some surgeons of wide experience and good judgment do not use drains as routine practice following cholecystectomy, and state that they have no cause to regret this omission. However, many others are convinced from their observations that it is better to insert a drain and risk a useless application with a good result than to omit the drain and risk a subphrenic accumulation of bile, blood or peritoneal fluid.

A drain should not be a substitute for careful surgery. Hemostasis, the closure of openings in ducts and the suture of leaking bile channels lying in the gall-bladder bed of the liver prevent the accumulation of blood and bile in the subhepatic space. A hernia practically never results when the drain leaves through a stab wound on the right side below the costal margin.

Summary

ANATOMIC hazards in surgery of the biliary tract are present from the moment the initial incision is made until the last suture is placed. The location and the size of the abdominal wall incision are factors that determine the ease with which surgery on the biliary passages may be accomplished. The importance of abdominal exploration to determine the presence of coincidental pathologic conditions is emphasized. In a well-exposed and illuminated field all structures may be visualized and the risk of injury to vessels and ducts minimized. The anatomic importance of the quadrate lobe is emphasized.

There is no substitute for care and skill. It is better to do well what needs to be done than to hurry the procedure and risk an accident. Time is not a factor so long as it is not wasted. Closure of the abdominal wall securely to prevent herniation is an essential part of the operation.

Pathologic and surgical factors in biliary tract surgery are also important but are not under consideration in this article.

(25 East Washington Street.)

Next Best

DR. MACINTOSH'S consulting rooms are in what once was the servant's lodge of a Victorian townhouse, where the doctor now lives. The waiting room—a long, barren place, formerly the servants' hall—was the antithesis of the anteroom of a successful Victorian or Edwardian physician. It was cold and dreary. There was no receptionist; there were no books or periodicals, no pictures on the walls; only some 20 hard little folding chairs. When I came in, the room was full. Most of the men and women were elderly and rather shabby, but none looked particularly sick. At length my turn came, and after Dr. MacIntosh had examined me, we talked a while. "You seem to have a great many sick people in this town," I said. "Not so very many, really," said Dr. MacIntosh. "A great many old people in this town, especially, yes." "And you're able to treat them very quickly," I remarked. "Treat them?" he replied. "Not one-fifth of those people you saw require any treatment. Thy're old, and they have nothing to do, so they come to sit in my waiting room, and make me fill out forms for them. After all, this is the next best thing to the cinema."

—From "Britain's State Medicine Poses Problems," by RUSSELL KIRK, in *J. Indiana State Med. A.*, March, 1956.

Grease Gun Injury

—A CASE REPORT—

DONALD N. VIVIAN, M.D., and SAMUEL G. CHRISTIAN, M.D.
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ON JUNE 27, 1955, a 33 year old white female employee was seen in the industrial dispensary, with the following history:

At about 3:30 P.M.—two hours before she came in—she felt a sudden sensation of pressure and stinging in the distal phalanx of the middle finger of her left hand. She had been greasing a propeller counterweight with a high-pressure grease gun attached to a zerk fitting. In order to prevent excess grease from leaving the counterweight, it was routine procedure to cover the hole opposite the grease fitting with a strip of cardboard held firmly in place by the operator's other hand. Here the zerk fitting was defective (ball bearing missing), permitting the full pressure of the grease gun stream (2,000 lbs. per square inch) to penetrate the cardboard and enter the operator's finger which was held about two inches from the zerk aperture.

Shortly following the injury, she noted the onset of pain and swelling in her finger. At the time of the initial examination the distal phalanx of the left middle finger was swollen, mottled, and extremely tender. The distal interphalangeal joint was fixed in a position of mid-flexion. On the volar surface immediately over this joint, there appeared a small endurated puncture wound surrounded by a zone of yellow discoloration about 1.5 cm. in diameter (Fig. 1). The lesion had the typical appearance of a chronic staphylococcic infection. She was immediately referred to the base infirmary for observation and treatment. On examination and forced extension of the distal phalanx a thin, ribbon-like stream of grease was expressed from the puncture wound.

The following day, June 28, 1955, under triple nerve block, incision and drainage were carried out, evacuating a moderate amount of necrotic-like material (Fig. 2). The cavity was explored and found to extend up to the distal portion of the finger. The patient was placed on antibiotics, sedatives, and hot soaks. The distal portion of the finger became yellowish purple in color. It seemed at the time that an amputation might be indicated but it was felt that an effort should be made to save the distal portion. The finger was dressed daily but showed little improvement.

On the fifth day following the injury the skin over the volar surface of the distal phalanx became gangrenous (Fig. 3). A large draining cavity was present, extending almost to the proximal palmar crease. A more extensive incision was made and the area of gangrene excised (Fig. 4).

About two weeks after the accident the drainage became purulent and the terminal portion of the finger showed definite evidence of more extensive gangrene. In view of this, the distal portion of the finger was amputated under pentothal anesthesia. The patient had an uneventful recovery.

Review of the Literature

IN 1937 Rees[6] presented the case of a 47 year old mechanic who injected fuel oil under 4,000 lbs. pressure into the tip of his right middle finger from the jet of a diesel engine. He was treated conservatively for seven days and then incision and drainage were done. Amputation was finally resorted to. This was the first reported case of this type we could find, although Hesse,[5] in 1925, reported 183 cases in the Russian Army of in-

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

dividuals injecting machine oil, paraffin and linseed oil into their extremities in order to avoid military service. These cases are dissimilar to ours in that extreme pressure was not involved. Rees concluded that the severity of the accident is dependent on the quantity of the oil injected and the pressure under which it is introduced. He believes that early and liberal incision over the involved areas is the treatment of choice.

Smith,[3] in 1939, presented the case of a 31 year old automobile mechanic who accidentally injected his left index finger with a grease gun under 7,000 lbs. of pressure. About 12 hours later incision and drainage were done. On the sixth day post-injury the finger was soaked in ether in an effort to dissolve the grease, but this was of little avail. Amputation was resorted to on the ninth day post-injury. Two months later the patient was able to resume work. On pathologic examination, numerous subcutaneous abscesses infiltrated by polymorphonuclear leucocytes were present, as well as considerable necrosis of the subcutaneous connective tissue. In some areas foreign body giant cells were seen. Smith concluded that early incision is the procedure of choice, and that even the history of such an injury is cause for immediate wide incision of the area.

Dial,[4] in 1938, reported two cases of hand injuries due to the injection of oil under high pressure. One patient, an engineer, injected oil from a diesel engine into his index finger, which necessitated eventual amputation of the distal phalanx owing to necrosis. This case was slow in healing, and for several weeks small pieces of wax were extruded from the stump. The other case was an engineer who injected his left index finger from a diesel engine fuel jet. Incision was done immediately. The patient recovered without the loss of his finger, but lost all motion of the distal phalanx. Passive vascular exercise was done in this case. The value of this is extremely difficult to determine. In 1939, Brooke and Rooke[1] reported two cases of grease gun injury.

Meson and Queen,[2] in 1941, presenting two cases of grease gun injury to the hand, gave a fine description of the clinical course, dividing it into three stages. The early stage is the actual entrance of the grease into the finger, and is usually painless. The first symptom is swelling and numbness of the finger, which becomes whitish yellow. A small pinpoint puncture wound is seen at the site of the injection, and a small amount of grease may be extruded by compressing the area. Later, edema and pain appear, and in a few days there is gangrene of the skin over the involved area. Soon infection develops. Healing is slow, and grease is extruded from the surface for several weeks. The second or intermediate stage develops several weeks after the injury. If the grease remains in the finger, a chronic inflammatory reaction begins and produces hard, palpable nodules or tumors. The grease is dispersed more extensively through the tissues than one would suspect from the appearance of the primary lesion. The third or late stage occurs several years later and is described by Hesse[5] and Vinogradov.[7] Erysipelas-like infections occur, ulcers appear and reappear, and often fistulas are seen. Small abscesses develop intermittently and discharge necrotic material. A diffuse fibrosis begins and will often produce an enlarged extremity resembling elephantiasis. This late stage, as described by Hesse[5] and Vinogradov,[7] occurs in the legs. Whether this will occur in the stump of an amputated finger is not known. We could find no late reports of this type of injury in the literature. Meson and Queen recommend that in the intermediate stage in which tumors have developed, extensive removal of these tumors should be done.

Comment

WHEN our patient presented herself to us we were uninformed as to such an injury. We feel, after reviewing the literature, that perhaps many other physicians are unaware of its serious nature. It would seem that this is a more common type of injury than has been reported. One reason that possibly accounts for the lack of reported cases is the similarity in appearance to an infection. Our case points this out well. The patient was seen by one physician before coming to us, and gave him the history of injecting grease into her finger. This physician believed she had an infection which probably began several days before. It was not until a nurse was able to extrude grease from the small puncture wound that the woman's story was accepted. As may be seen from Fig. 1 the appearance is similar to that of an infection. It did lack the heat which is neces-

sary to establish the diagnosis of infection. It was 24 hours before an incision was made to facilitate drainage (Fig. 2). There was some improvement, but it soon was obvious that gangrene and extension of the abscess had occurred (Fig. 3). A second attempt was made to get adequate drainage and to debride the gangrenous area (Fig. 4). The abscess did not involve the tendon sheath but did extend to the most proximal crease of the finger. After several days it was apparent that a useful finger would not be obtained, and amputation was carried out, and closed primarily with a small Penrose drain. The drain was removed in 24 hours and primary healing occurred. There was no prolonged healing of the amputation site. The patient obtained a good useful finger.

It is the consensus of the reviewed literature that early incision and drainage are the treatment of choice. This, in our opinion, is sound surgical judgment because of the four main factors involved in this lesion. First, this treatment relieves some of the extreme pressure which is present owing to the grease in the tissue. Second, it removes much of the foreign body irritant. Third, it removes much of the bacterial contamination which is unavoidably injected with the grease. And fourth, it creates good drainage for the secondary infection which invariably occurs. Whether gangrene can be avoided we cannot be sure.

If the drainage is carried out soon enough following injury, it may prevent necrosis and gangrene in many cases; but it is conceivable that, as in our case, the skin may be disrupted from its blood supply and local areas of gangrene and necrosis occur in spite of incision and drainage.

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The Middle-Aged

The physician who specializes in industrial medicine probably has more contact with the middle-aged than does his colleague in private practice. Industry is interested in the health of employees in this age bracket for many reasons. These men and women are in their productive years and do best when healthy and happy. Many corporations are concentrating on better employee health through periodic examinations, medical counseling, and accident prevention. Nowadays, no one adheres to the idea that the job is more important than the man. Industry realizes that a sick employee is a total loss and workers who are not feeling up to par cannot do their job well. The industrial physician regards health in its broadest sense and the examination is geared accordingly. The health habits of the employee are just as important as his blood pressure, vision, and hearing. Any accident that occurs endangers not only his own life but the lives of others. It is everyone's responsibility to strive for fitness to keep the team going as an efficient unit.

—From "Strive for Optimum Health," in "How to Keep Well," Dr. Theodore Van Dellen's column in *Chicago Tribune*, March 30, 1956.

The Hartford Plan—
—Small Plant Medical Service

TENTH ANNIVERSARY
Hartford, Connecticut, April 24, 1956

THE HARTFORD Small Plant Medical Service, Hartford, Connecticut, on April 24, 1956, celebrated its Tenth Anniversary. A reception and dinner at the Hartford Club were attended by Presidents and other officers of the seven participating companies, together with the Medical Director of the Service, the nurses from the various companies, representatives of the Connecticut Manufacturers Association, the Yale School of Medicine, the Connecticut Department of Labor, the Connecticut Department of Health, and a number of medical consultants and other invited guests.

Ellsworth S. Grant, Vice-President, Allen Manufacturing Company, and Coordinator of the Service, welcomed the group and reviewed the circumstances attending the inception of the Service. He then introduced W. W. Dickinson, M.D., present Medical Director, who related the interim history, and the accomplishments of the Service during the 10 years since its inauguration.

Three of the original members, Allen Manufacturing Company, Capewell Manufacturing Company, and Cushman Chuck Company, still belong to the Service. The other current participants are Hart Manufacturing Company, Hartford Electric Steel, Jacob Chuck Company, and Wiremold Company.

The number of employees in these companies ranges from 200 to 700. The Service "continues to function soundly, and with the enthusiastic support of its member companies."

Following Dr. Dickinson's account of the highlights of the 10 years, Ronald F. Buchan, M.D., Director of Employee Health, Prudential Insurance Company of America, and Associate Clinical Professor, Industrial Medicine, New York University-Bellevue Postgraduate Medical School, addressed the assembly on "The New Look in Occupational Medicine."

Ronald F. Buchan, M.D. (left); W. W. Dickinson, M.D. (center); Ellsworth S. Grant.

Dr. Buchan was the first Medical Director of the Service. His presentation follows:

The New Look in Occupational Medicine

RONALD F. BUCHAN, M.D.
Director of Employee Health
The Prudential Insurance Company of America

TEN YEARS ago with the inception of the Hartford Small Plant Medical Service there came into existence a successfully operating small plant in-plant medical service.[1] Dr. Robert O'Connor, in his comprehensive analysis[2] of existing types of small plant medical services, refers to the Hartford Plan as the "Classic Example." Some of you are more familiar with the actual birth of this idea than I am. I think particularly of Dr. Albert S. Gray, my mentor, who for years had advocated such an enterprise, and of Ellsworth Grant and Dr. Preston Barton who laid the groundwork leading to the final product which I was invited to direct. I recall quite vividly the morning in West Hartford on which—shortly after my release from the U.S. Public Health Service—I set forth for my first day of practice in industrial medicine.

That day saw a full round of visits and conferences in the six plants then constituting the group, and we were under way.

IT MIGHT be interesting to refer to the stated objectives of the service at that time. They were:

1. Continuous personal scheduled medical service for industry, including care or supervision of employees with occupational disease and trauma; preplacement,

periodic, and retirement physical examinations; industrial hygiene services; advice on matters related to safety, sanitation, compensation law, communicable disease, nutrition, and rehabilitation.

2. Health conservation through counseling service to employees on personal health problems; and evaluation of such problems with referral to family physician or appropriate community facility for best positive disposition.

3. Control of absenteeism for medical causes.

4. Maintenance and analysis of complete confidential medical records.

5. Presentation and medical interpretation to management of significant statistics based on complete records.

6. Supervision of nursing services, and purchase and maintenance of medical supplies and equipment.

These objectives are as pertinent today. We have grown a bit, however, in industry, and in medicine, and it might be well to take a fresh look at our goals.

May I take for granted that we are all settled down now into a fairly comfortable sort of relationship with our medical services? Let's not think, however, that everything is firmly jelled and static in its operations and implications. None of you, I am sure, would admit this to be true with your industry. And in this field of medicine which is most closely related to the technicological advances of industry, there can never be a static concept. How, then, can medicine continue to help the small plant in a lively and effective manner? What are the increasing challenges of today?

ONE OF THE first and most important areas to look at with a critical eye is that of absentee control. Maybe you are sick of hearing of this subject. That is understandable, because if any horse has ever been whipped to death, this is it. Industrial physicians and personnel officers have worked it over time and time again. Despite this fact I don't believe we are stymied for constructive action, even if we are talked out. It was interesting to note, at the Annual Industrial Medical Discussional held last winter at the University of Michigan, that almost simultaneously all the Medical Directors gathered there, representing a diversity of American industries, wanted to take a new look at this old bugaboo.

We are all aware that the control of absenteeism has often been a major selling point for the establishment of industrial medical services. This is not necessarily an error, but at least we should place it in perspective rather than holding it forth as the keystone for the justification of our existence. A detailed discussion of this matter would take us all evening. However, briefly, I should like to call attention to the numerous factors which really influence sickness absenteeism. Two recent publications[3] of the American Medical Association, representing the combined experience and sponsorship of the Committee on Medical Care for Industrial Workers, the Council on Industrial Health, and the Council on Medical Service, set forth the astounding number of variables, medical, administrative, social, economic, and psychological, which influence the absentee rate. Dr. Leo Wade, in a recent independent discussion,[4] has epitomized them as follows:

A. INTRINSIC, i.e., within the worker: (1) *Health Status*: (a) physical, (b) emotional, (c) social; (2) *Adjustment to Job*: (a) innate ability or intelligence, (b) education and/or training, (c) proper assignment.

B. EXTRINSIC, i.e., the worker's environment: (1) *Biological Environment*: (a) supervisor, (b) associates on the job, (c) family, (d) union officers, club associates, church associates, etc., (e) friends and neighbors; (2) *Physical Environment*: (a) health hazards on and off the job, (b) housing and housekeeping both on and off the job, (c) economic climate, etc.: (1) salary and benefit programs, and (2) availability and use of medical services.

From a perusal of these many variables it is apparent that any approach to the control of absenteeism is a multi-disciplined affair. It is not entirely medical, nor entirely administrative, but calls for the team approach.

We may take as a premise that absenteeism for all causes, including medical, will always be with us. However, we need not be impotent in the face of it.

A number of years ago a former staff member of our Prudential Service, for some time now associated with the Du Pont Medical Department, clarified in a common sense manner some of the astounding amount of verbiage grown up around and choking the basic problem of absenteeism.[5]

His precepts are worth repeating here:

1. A business organization depends on the cooperative efforts of people who are healthy enough to work regularly at their assignments.

2. The basic reality on which the existence of the individual's job rests is that someone is needed to carry out the details of his particular assignment.

3. Regardless of whether absence is justifiable on medical grounds, absence constitutes a detriment to the organization and to the individual's career. He is that much less effective as an employee.

4. An aura of suspicion always hangs over a chronic absentee, and this cannot be waved aside by any statement the company doctor may make in his support. Supervisors and personnel people may be too polite to tell him so, but this is the truth.

5. It is expected of an employee that he take every possible measure to keep himself physically fit for his job.

6. It is well-known that chronic absenteeism is not chiefly a medical matter, but is a matter of the individual's incentive and his regard for the job.

What to do about it? To get to the root of the matter, the supervisor, the personnel officer, and the industrial physician must work together and attempt to answer the following questions which

Dr. Wade has nicely spelled out for us:

I. *Is the employee ill?*

If so, the plant physician should attempt to answer the following questions:

(a) Is his illness a justifiable basis for his absenteeism, or is it merely an alibi?

(b) Is he under a physician's care? Does he follow his physician's advice?

(c) Is his condition likely to improve or worsen with the passage of time?

(d) Are his health and life expectancy likely to be adversely affected by continued work on the job?

(e) Is his absenteeism in any way related to an industrial illness or injury?

The supervisor should answer the following questions:

(a) Is he an effective and desirable employee despite his illness?

(b) Is he in a job where sub-optimal performance due to poor health may contribute to or cause substantial deviation from the optimal productivity of a production unit or department?

(c) Can he be used effectively in some other assignment more nearly compatible with his physical or emotional limitations?

(d) Is the employee eligible for retirement under any of the company plans?

II. *If the employee is not ill*:

(a) Is his absenteeism typical of his department? If so, what factors, environmental, physical, social, or psychological, are influencing his and his associates' lack of enthusiasm for the job? Can these be corrected?

(b) Will reprimanding on one or more occasions change his attitude?

(c) Should he be discharged or retired for the good of the company?

Here we find the framework for a constructive approach to absentee control. This is a far cry from the routine checking in and checking out through the Medical Department, of the absentee.

NOW LET US spend a few minutes with problem drinking. Here in the State of Connecticut, owing to the significant work of the Yale Center for Alcohol Studies and the Connecticut Commission on Alcoholism, most of you are familiar with the concept of this problem as a disease. Every one of you has at least one problem drinker on your roster, if not more. He may or may not be recognized. A few ABC's, however, are always useful, and this goes for physicians and management:

1. The problem drinker will never stop drinking through appeals based upon his responsibility to job, family, church, community, or self. The most fervent promises will be made, but "whiskey makes promises which it cannot keep."

2. Alcoholism is a disease.

3. At least 50% of problem drinkers can be salvaged and rehabilitated for effective work for their plant, their family, and their community. Can you ask for better than a 50-50 chance in this tragic illness?

With these ABC's in mind it is actually a simple matter to set up a plant program for the control of problem drinking. There is nothing complicated about this, and there are no mysteries attached to it. The only mystery is why more of us don't do something about it.

Briefly, a control program can be described as follows:

1. Recognition of the problem drinker.

2. Medical-administrative action to establish a point of reference for the case. This may take the form of placing the employee on rehabilitative probation.

3. Immediate administrative and medical action to initiate a rehabilitation program. Numerous avenues are open—the family physician, the psychiatrist, Alcoholics Anonymous, community clinics under the egis of voluntary groups, hospitals, teaching centers, churches, and health departments, to mention a few.

It is important, of course, to recognize that the problem drinker must want to lick his problem and be willing to accept help, but he needs help in developing that motivation. It is also important that his supervisors do not shield his deficiencies out of a mistaken sense of loyalty.

It may be decided early that the opportunities for rehabilitation are meager in a particular case, or that circumstances at the plant will not permit the time, effort, and expense. If such be the case the worker may find himself terminated. The industrial physician then has a further responsibility to refer the worker to proper rehabilitation facilities in order that he may make himself employable again.

These things seem relatively simple, but the question is why more of us don't do them, and why we haven't done them sooner. Rehabilitation rates up to 75% are reported by some large industries. The same principles are, of course, completely applicable in the small plant. With the physician, nurse, and management rehabilitation-minded, and properly oriented on the problem, there is no difference in potential for the control of alcoholism between the small plant and the large one. Indeed, because of the intimate relationships of the small plant, the detection and rehabilitation of the pre-alcoholic or alcoholic may be more effective.

A MATTER which is the subject of continuing comment, press and magazine articles, and professional journal discussion is that of retirement and its related problems. There has been much viewing with alarm the increase in workers over 45 and the increasing population over 65. Numerous social, economic, and psychological problems attached to this increase in senior population have been the basis of many speculations and suggestions for dealing with an apparently acute social situation. There has been much sniping, for instance, at the compulsory fixed retirement age, and much argument pro and con, yet it would seem that we sometimes deprive ourselves of useful services from useful employees because of the inflexibility of a compulsory re-

tirement age. Like so many other things, this is a complex matter, but your Medical Director can be of great service to you. It is again a combined administrative-medical problem, that calls for teamwork between the physician and the personnel officer.[6]

I should like to tell you about a study which has been under way for the last three years—and will continue for a total of seven years—by the Department of Sociology and Anthropology and the Department of Preventive Medicine, both of Cornell University, and some 250 diversified American industries. My company happens to participate, so I have more than a passing interest. In this program, one year prior to retirement employees are invited by their companies to join a retirement orientation program. Through a series of group discussions the economic, social, psychological, recreational, spiritual, and medical factors pertinent to retirement are thoroughly explored. Complete psychological appraisal of the individual and his attitude toward work, employment, finances, retirement, and other factors is made. The facts of available housing, income, health problems, and other pertinent matters are delineated. Extensive physical and laboratory examinations are done by the Medical Department, utilizing the CMI (Cornell Medical Index) questionnaire. These individuals are then followed each year through retirement and the post-retirement years. It is obvious that much significant information may be developed from this. One of the interesting things, in the most recent progress report from Cornell, is that the problem in general does not loom as large to the retired employee as many prophets of impending disaster would indicate. As in so many other things, it is necessary to get at the facts, to study them properly for a sufficient length of time, and to evaluate properly the magnitude of those problems which may at first glance seem to be overwhelming. This study is, of course, only one of the many intensive efforts under way to evaluate this subject. With the majority of our workers concentrated in small industries, certainly these data are of prime concern to such a group as this.

I THINK IT appropriate that we emphasize at this point that any industrial medical program is basically preventive, and not therapeutic. Therapy is the legitimate field of the community practitioner, although he is no less interested in prevention. Industry should not allow itself to gravitate toward the field of curative medicine because of a lack of understanding and an unbalanced emphasis on the dollars-and-cents value of the healthy worker. Industrial medicine must complement and supplement the community services.

It might be worth-while then to bring you up to date on the status of industrial medicine in the professional family. In June, 1955, this field was at long last recognized as a legitimate specialty field, and the mechanism for specialty certification has been established under the American Board of Preventive Medicine, with the first men certified in November, 1955.[7] This is acknowledgement of the special problems of industry and the special features of industrial medicine which makes its practitioners of special use to the community and industry. Exceptionally high standards have been established. This makes it imperative that industry be aware that there will be a right man for its full-time work in medicine. He must have proper incentive in terms of work conditions, professional advancement, and salary if he is to be attracted to the rigorous course of training in industrial medicine and thereafter to do the best job in industry. This, of course, will require great discrimination on the part of management. Make no mistake, the elevation of standards for the industrial physician serves industry first. Let industry reciprocate this professional faith with realistic and equitable rewards for the man who is willing to commit his professional life to its special problems.

WE HAVE looked, nostalgically, at some of the aspirations and objectives of the Hartford Small Plant Medical Service. We have reviewed together some of the areas of continuing challenge. We trust we have shown that the service need not be static, that the opportunities for constructive work increase with our industrial and professional development, and that some of our old procedures and practices need a new look, a new emphasis, and new orientation. With this, it is felt that the value of medicine to industry will continue to grow hand in hand with industrial development, and that the physician who is alert to his responsibilities and the needs of industry will continue to function in a significant manner in his plant and community. Just one parting thought. . . . There is no aspect of medical service in the "big" plant that cannot be adapted to the "small" plant. The question is not "how?" but "why not?"

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Contact Sensitivity to Inappreciable Exposures

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GEORGE E. MORRIS, M.D., Boston

THE PURPOSE of this paper is to emphasize the limited exposure a patient requires to be subject to a recurrence of an eruption due to allergens to which he has been previously sensitized.

All dermatologists are acquainted with the patient who never becomes "hardened" and who, let us say, breaks out every time he washes his hands with turpentine or thinner; and we all have seen patients who could not return to work with resins; but cases that break out from "homeopathic" exposure, and imperceptible or infinitesimal exposures, have not often been reported.

Some of the most remarkable instances of exceptional sensitivity occur in individuals handling antibiotics, especially penicillin and streptomycin. Dermatitis from these antibiotics poses an economic problem when it occurs in biochemists, pharmacists, physicians, and nurses, and may represent a serious health hazard when the antibiotics are present in foodstuffs such as milk from penicillin-treated cows.

Permission recently was granted by the Food and Drug Administration for the use of chlortetracyclin (aureomycin) for preserving uncooked, dressed poultry. Other uses suggested by food economists are the dipping of whole carcasses of meat in an antibiotic solution, dipping pre-packaged salad mixes in tetracyclin or streptomycin solutions, the adding of an antiobiotic to whole milk at the time of milking, and also using antibiotics to prevent bacterial spoilage of fish.[1]

The following case histories are submitted from our practices:

CASE 1: E.L., a matron, aged 29 years, had been employed by a manufacturer of antibiotics for about nine months when she developed a dermatitis of her hands, wrists, forearms, and face for which she was hospitalized. In approximately eight months she had recovered. As the dermatitis was attributed to contact with penicillin, on returning to work her job was restricted to packing sealed ampules. Nevertheless almost immediately she experienced a recurrence requiring three months for recovery. On this occasion she apparently had developed systemic as well as epidermal sensitization, since she would experience attacks of asthma, laryngeal edema, and periods of unconsciousness while handling the *sealed* ampules.

It was evident that she would have to discontinue "all" contact with penicillin. This she did, and had no further trouble.

About three months later, her general health being normal, she was admitted to the hospital for the removal of vaginal polyps. A patient in the bed adjacent to hers received an injection of penicillin. E. L. developed a generalized urticarial eruption within 20 minutes. Some time later, while visiting her sister, she developed a contact dermatitis of her buttocks, following use of the toilet seat which her niece, who had recently had an injection of penicillin, had previously used.

On another occasion the patient, who had had no difficulty for two months, took a child to the hospital for a penicillin injection, and immediately afterward developed a generalized urticarial eruption.

One other feature, illustrating the extreme sensitivity of this patient is that she could not walk past the plant manufacturing antibiotics where she had formerly worked, without developing urticaria. Since the plant was located between her home and the subway that she took to work on her new job, she found it necessary to make a detour around it.

A piece of cotton wet with a solution containing 15 units of penicillin G was applied to the patient's forearm. In two hours she complained of intense itching at the site of the test, dizziness, and, within another hour, angioneurotic edema of the face. This gradually subsided over the ensuing day or so. A control test done previously with plain water was negative.

CASE 2: C.P., a girl, aged 24, also employed by a manufacturer of antibiotics, developed an unusual sensitivity to penicillin. Complete removal resulted in recovery. However, while working at an entirely unrelated occupation a girl working next to her was sucking a penicillin lozenge. The patient developed a conjunctivitis and periorbital dermatitis similar to that which she had experienced when working with antibiotics.

CASE 3: M.D., a physician, aged 50, was a most unusual instance of sensitivity to penicillin.

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His case was reported in part 10 years ago.[2] The portion of his history which is reported here was not published. Both he and I knew it to be true but doubted that others would believe our observations. Possibly there are many who will disbelieve them now.

This man developed an extreme degree of sensitivity with a patchy contact dermatitis on his fingers, about his eyes, and on his wrists. His visual fields were also contracted and he developed color blindness, being unable to distinguish the special color charts in any combination.

The most unusual feature in this case was that on one occasion he carried a box of penicillin. The powder was in glass ampules; the latter were in a sealed cardboard carton wrapped in two layers of paper. The physician was wearing an overcoat, and a jacket, but had on a short-sleeved shirt. He carried the box under his left arm. Shortly after arriving at his office, he developed a dermatitis on his arm and forearm at the contact sites of the edges of the cardboard carton. At this writing he experiences no difficulty but avoids all possible contact with penicillin.

In connection with the foregoing case, Morris-Owen[3] recently cited the case of a general practitioner who was considering giving up clinical work, as he had even experienced reactions from examining patients who were under treatment with penicillin.

Other cases of extreme sensitivity, not due to contact with antibiotics, are the following:

CASE 4: H.M., a 46 year old man, had worked in a machine shop where naphtha was used for the cleaning of machine parts. In one phase of his activity he came in contact with the solvent, and after eight months of work a severe dermatitis appeared on his hands and face. This subsequently spread to cover his entire body. He continued to work for three weeks, but then became disabled, and was out of work for months. It was decided by the physician and the patient that his dermatitis had been so severe that he should not try to return to his former occupation. Accordingly, he returned one day to the factory and spent about an hour in the office, which was on the first floor, one floor below the machine shop. The next day he had developed a diffuse, generalized, erythematous eruption, swelling of the face and hands, similar to the eruption for which he had first been treated.

Here, then, is the case of a patient whose eruption recurred merely from entering a building where solvent fumes were present.

CASE 5: P.B., male, aged 25, worked in a phenol formaldehyde resin factory where table tops were made. In the course of his work he was exposed to phenol formaldehyde resins, urea formaldehyde resins, and melanine formaldehyde resins.

After working in the plant for six weeks he developed a generalized vesiculo-erythematous eruption, most severe about the face and arms, but also present on the unexposed parts. He was treated over a period of two months and recovered. He decided he would try no longer to seek employment in this plant. Therefore he returned to the vicinity of the plant at closing time to fraternize with his co-workers and tell them he would not see them for a while because he was not going to work there any more. The next day he developed a vesicular dermatitis of his entire body.

This is an instance of a man who returned to the vicinity of the plant where he had worked, and whose skin erupted from the infinitesimal exposure incurred by talking to men who no doubt had fumes on their clothing.

CASE 6: E.T., a 33 year old man, had worked as a machinist for 15 years and subsequently developed an erythematous eruption of the hands, face, and soles. He was patch-tested with two oils and with dilute trichlorethylene, for these were the only substances of a suspect nature. He had a positive reaction to trichlorethylene and a negative test to the two cutting oils. He was treated on two occasions and returned to the plant, but at no time (according to the patient) did he get within 50 feet of the trichlorethylene degreaser; nevertheless, on each occasion when he returned to the plant his hands, face and feet became red, swollen and subsequently desquamated so that he found himself unable to return to the same room where the sensitizing chemical was used.

OTHER cases of similar minute exposure, although not concerned with occupational dermatoses, are the following two, taken from our files: one J.B., the two year old son of a physician, and the other, J.H., a five year old boy with a history of atopic dermatitis. The former had swelling and redness of his face, with closing of one eye within a half hour of the doctor's bringing lobsters into his house, even though the bag of lobsters was not opened; and the second boy, J.H., developed swelling of his eyes and face from the mere cooking of lobsters in his home.

Summary

CASES are reported in which people previously sensitized have had recurrences of their dermatitis from infinitesimal exposures.

Antibiotics, solvents, resins, and food odors are herein reported as causing dermatitis from minute exposures.

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The Philadelphia Conference

APRIL 21-27, 1956

THE "BIG FIVE" in Industrial Medicine and Industrial Hygiene made the Annual National INDUSTRIAL HEALTH CONFERENCE at Philadelphia in April the occasion of their 1956 Annual Meetings.

For the INDUSTRIAL MEDICAL ASSOCIATION the Annual Meeting, April 23-26, was its Forty-First.

For the AMERICAN INDUSTRIAL HYGIENE ASSOCIATION, the Annual Meeting, April 23-27, was its Seventeenth.

For the AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS, the Annual Meeting, April 21-24, was its Eighteenth.

The AMERICAN ASSOCIATION OF INDUSTRIAL NURSES held its Fourteenth Annual Meeting April 23-26; and the AMERICAN ASSOCIATION OF INDUSTRIAL DENTISTS its Thirteenth, April 24-26.

AMONG the many who have attended these National INDUSTRIAL HEALTH CONFERENCES since their beginning the opinion was freely expressed that while all were good, and some better, this one was best. The days—and the evenings—teemed with committee meetings, clinics, board meetings, business meetings, group conferences, concurrent sessions, problem discussions—for some tightly-scheduled from breakfast to banquet—for all replete with interesting events and instructive presentations, by no means least among the latter being the Technical Exhibits, 110 in number, displaying the newest and best in supplies and equipment for the Industrial Medical Department. The program throughout was brilliantly planned, and superbly conducted. The formal meeting subjects were well chosen; their timely importance was clearly reflected in the total registration, which exceeded all previous figures, and the filled-to-capacity session meeting rooms.

The opening session of the IMA program, Tuesday afternoon, April 24, featured the subject, "Communicating and Convincing." Following the Address of Welcome by James P. Dixon, M.D., Philadelphia's Commissioner of Health, the Sappington Memorial Lecture, entitled "The Engineering of Consent," by Edward L. Bernays, was read, and this was followed by a Symposium on the feature subject. The presentations by Fillmore N. Sanford, Ph.D., William E. Robinson, and William P. Shepard, M.D., appear elsewhere in these pages. The hall in which this session was held was more than filled—at least 1200 people sat, and stood, throughout the afternoon, absorbed in listening. One of industrial medicine's elder statesmen, who hasn't missed an IMA meeting for more than a score of years, was moved to remark that once long ago he attended an opening session of the industrial physician's Annual Meeting where he was one of the six who made up the audience. Such the contrast! And so throughout the week!

Industrial Medical Association Past-Presidents

Standing; Earle A. Irvin, M.D.; Floyd E. Shaffer, M.D.; Edward H. Carleton, M.D.; Edward C. Holmblad, M.D.; Royd R. Sayers, M.D.; Melvin N. Newquist, M.D.; McIver Woody, M.D. Seated: Frederick W. Slobe, M.D.; William A. Sawyer, M.D.; George F. Wilkins, M.D.; E. S. Jones, M.D. (President); Kieffer Davis, M.D.; Adolph G. Kammer, M.D.; Henry S. Brown, M.D.; Harvey Bartles, M.D.

ONE OF THE high points of the Conference was the IMA Banquet, Wednesday evening. This, by tradition, features four Awards.

The WILLIAM S. KNUDSEN AWARD, the highest honor in Industrial Medicine, was bestowed this year on Rutherford T. Johnstone, M.D., of Los Angeles. Dr. Max Burnell, Chairman of the Knudsen Award Committee, in making the presentation, said:

"Tonight, the Industrial Medical Association presents its 'award of distinction' to one of its pioneer members. This in recognition of his many outstanding contributions to his chosen field of medical practice, occupational medicine. As an internationally-famed author, toxicologist, medical consultant, lecturer, he has left an indelible imprint on the thinking, indeed upon the lives, of industrial physicians. It is fitting, therefore, that Rutherford T. Johnstone, of Los Angeles, became the unanimous choice to have this most coveted honor bestowed upon him by our Association. And it is fitting that he—born in this great Commonwealth of Pennsylvania, and educated in one of its fine medical schools—should return here to receive this long overdue recognition."

The Citation for HEALTH ACHIEVEMENT IN INDUSTRY—the Association's yearly award to management—was presented to the Pennsylvania Railroad. The first of several articles descriptive of the comprehensive medical service this company has inaugurated for its 110,000 employees appeared in this Journal last month (*Indust. Med. & Surg.*, 25:5, 221 (May) 1956). In accepting the Award, James W. Oram, P.R.R. Vice-Presi-

Upper right: Rutherford T. Johnstone, M.D., receiving the William S. Knudsen Award. Presentation by Max Burnell, M.D.

Next: James W. Oram, Vice-President, Personnel, Pennsylvania Railroad (left), and Donald L. Glenn, M.D., Medical Director, Pennsylvania Railroad (right), receiving the Health Achievement in Industry Award. Committee Chairman, O. Tod Mallery, Jr., M.D. (center).

Next: Jermyn F. McCahan, M.D., presenting the Citation for Excellence in Medical Authorship to Dr. Theodore F. Hatch.

Lower right: L. Holland Whitney, M.D., presenting to Glenn S. Everts, M.D., the Industrial Medical Association Award for Distinguished and Meritorious Service.

Below: Kieffer Davis, M.D. (left), relinquishing the Presidency to Eli S. Jones, M.D.

HAZARDS of solvents...
at home - on the job
Exposure to solvents in housekeeping, home maintenance, hobby activities, or on the job, may be the obscure cause of vague symptoms or serious disability.
COUNCIL ON INDUSTRIAL HE
AMERICAN MEDICAL ASSOCIAT
Volatile solvents evaporate readily: a small amount of liquid makes a large amount of vapor or gas.
DANGEROUS WITHOUT ADEQUATE VENTILATION
4 CUBIC FEET OF
4 CUBIC FEET OF
SIGNS & SYMPTOMS
TREATMENT

The Award-Winning Scientific Exhibit of the Council on Industrial Health of the American Medical Association.

dent, Personnel, acknowledged the fine work of Dr. Norbert J. Roberts, in planning and organizing this medical program. Dr. Roberts was Dr. Donald L. Glenn's predecessor as Medical Director, and was, himself, the first head of a railroad Medical Department to have the title of Medical Director. In the course of his remarks Mr. Oram made a statement that is likely to have a powerful influence on management's attitude toward the economics of industrial medicine. He said: *"The cost of industrial ill-health is staggering!"* The presentation of this Award was made by Dr. Otto Tod Mallery, Jr., Chairman of the Committee.

Theodore F. Hatch, S.M., and Kenneth M. Cook, Ph.D., were awarded the Citation for EXCELLENCE IN MEDICAL AUTHORSHIP. This was for their article "Partitional Respirometry, a System for Measuring Pulmonary Functional Capacity in Terms of its Elements: Ventilation, Diffusion, Blood Flow," in *A.M.A. Archives of Industrial Health*, 2:2 (February) 1955. The presentation was made by Jermyn F. McCahan, M.D., Chairman of the Award Committee.

The INDUSTRIAL MEDICAL ASSOCIATION'S MERITORIOUS SERVICE AWARD was presented to Glenn S. Everts, M.D., Medical Director, Curtis Publishing Company, "in grateful recognition of his

"Intermission—Visit Exhibits."

American Association of Industrial Nurses: Opening Session, Fourteenth Annual Meeting: Left to right: Lorraine B. Wilson, R.N., Conference Chairman, Division Industrial Health Consultant, Liberty Mutual Insurance Companies; H. Ross Bunce, President, Philadelphia Council of Churches; Sara P. Wagner, R.N., President, AAIN, Director of Nurses, Standard Oil Company (New Jersey); W. P. Shepard, M.D., Second Vice-President, Metropolitan Life Insurance Company; Alice K. Leopold, Assistant to the Secretary of Labor for Women's Affairs and Director of the Women's Bureau.

many services to the Association—Member, 1944, Fellow, 1953, District Counselor, 1952-56, Chairman of Committee on Practice, 1954-55, Member of Organizing Committee of the Industrial Medical Association of Philadelphia, 1950, and assisting that Component Society to its present influential status, surveyor of many industrial medical services for evaluation according to IMA standards, and Chairman of IMA Convention in Philadelphia, 1956."

On Wednesday, April 25, at the Annual Banquet of the AMERICAN INDUSTRIAL HYGIENE ASSOCIATION, at the Penn Sherwood Hotel, Henry F. Smyth, Jr., Ph.D., gave the Donald E. Cummings Memorial Lecture, and received the Tenth Annual DONALD E. CUMMINGS AWARD for his many and important contributions to industrial hygiene. Dr. Smyth directs the industrial toxicology research at Mellon Institute, and also for Union Carbide and Carbon Corporation.

AMONG the special meetings and conferences supplementing the general program were the following:

On Monday, April 23, Max R. Burnell, M.D., Medical Director, General Motors Corporation, welcomed the Eighteenth Annual Medical Conference of General Motors' physicians, at Hotel Warwick. The day's program was followed by the Annual Reception and Banquet, at which Dr. Lawrence F. Hafstad, General Motors Vice-President in Charge of Research, gave an informal address on "Atomic Energy—Its Challenge to the Industrial Physician."

Also on Monday, April 23, at the Penn Sherwood Hotel, General Electric Company physicians were welcomed to the Company Medical Meeting by B. L. Vosburgh, M.D., Medical Director.

And on the same day Earle A. Irvin, M.D., Medical Director, Ford Motor Company, presided at a Meeting of the Ford Company Physicians.

At Frankford Arsenal, Philadelphia, the Association of Ordnance Industry Physicians—composed of medical officers assigned to or employed by ordnance plants—held a two-day Seminar, April 27-28, 1956.

AT THE IMA Business Meeting on Wednesday afternoon, 105 members were awarded Fellowships.

The election of officers saw E. S. Jones, M.D., voted in as *President*; Jerome W. Shilling, M.D., as *President-Elect*; H. W. Lawrence, M.D., as *First Vice-President*; D. John Lauer, M.D., as *Second Vice-President*; H. Glenn Gardiner, M.D., as *Secretary*; Edward C. Holmblad, M.D., as *Treasurer* and *Managing Director*. The new Directors, 1956-1958 are: Allen M. Collinsworth, M.D.; Carl U. Dernehl, M.D.; Homer S. Elmquist, M.D.; Emmett B. Lamb, M.D.; Gradie R. Rowntree, M.D.; Robert M. Watrous, M.D. The new Officers and Directors, and the new Committees, are listed on pages 4 and 6 herein.

THE SCHEDULED presentations at the formal sessions of the five participating groups reflected the work of 280 authors and speakers. The topics, while almost cyclopedic in variety and scientific significance, were directly in point as to current developments and their attendant problems. Among the newer were those associated with noise, and with radiation; among the more interesting were several arising from "singular industrial nursing positions." Of the five clinics on Monday, April 23, the one directed by Heinrich Brieger, M.D., at Jefferson Medical College, and devoted to "new or unusual occupational diseases," attracted special attention.

Industrial Medical Association

President's Page

IN ANY LARGE organization such as the Industrial Medical Association, inescapably the most effective work year by year is accomplished not usually by the officers, and not necessarily at the organization's headquarters, but rather by the hard-working Committees. Recognizing this, the IMA Committees for the coming year were appointed prior to the Philadelphia Health Conference, in order to give them the utmost opportunity to survey the areas of their efforts, explore their possibilities to be of use, and set about their various activities.

Since most of the Committees are concerned with matters of permanent importance, the effort was made to secure continuing memberships, particularly as to the Chairmen. The gracious and almost unanimous response to invitations in this respect was most heartening, and is deeply appreciated. Needless to say the Officers and Directors will do their utmost to help the Committees and their work in every possible way.

Some of the Committees, of course, are necessarily what might be called intra-Association. These have been, and will continue to be, primarily of service to the members. Many Committees, however, are of national significance. Their work is of value not only to the members, but also to the whole field of medicine in industry to which they have dedicated their careers. The Committee names are indicative of the areas of their work. The subjects to which their attention is directed embrace a wide range, but every one is important. Already their reports have exerted a definite influence on industrial medical practice, and more than a few have been persuasive toward the education and enlightenment of management. Their work will be increasingly constructive.

In addition to the permanent Committees, the special groups concerned with the Annual Industrial Health Conferences deserve commendation. These, of necessity, are different in membership from year to year, as the site of the Conference moves from place to place. Successively, these Committees have staged and managed many fine Conferences. Particularly noteworthy was the work of the Committees at Philadelphia in April. Space does not permit acknowledgment here of the debt owed to the individual Chairmen and members of the local groups. Each, however, has the consciousness of a job superbly done. For which, the gratitude of all.

E. S. Jones M.D.

Association News

First Inter-American Conference

THE UNIVERSITY of Miami, School of Medicine, jointly with the University of Havana, School of Medicine, Cuba, will hold this year the first Inter-American Conference on Occupational Medicine and Toxicology. The meeting will be held September 3 to 7. The official language of the program will be Spanish.

This year the Conference will be held in Miami with the University of Miami, School of Medicine serving as host. It is expected that this Conference will be repeated next year with the University of Havana serving as host.

The program is in the hands of a Committee from these two Universities. General Chairman of this year's meeting is DR. HOMER F. MARSH, Dean of the School of Medicine of the University of Miami. Co-chairmen for the University of Miami include DR. RALPH JONES, JR., Professor of Medicine, DR. WILLARD MACHLE, Research Associate Professor of Pharmacology, and DR. WILLIAM B. DEICHMANN, Professor of Pharmacology. The Committee of the University of Havana includes the following: DR. ANGEL PERES ANDRE, Acting Dean (Vice-Dean), DR. RAFAEL PENALVER, Instructor in Legal Medicine and Toxicology, DR. VICENTE PARDO CASTELLO, Assistant Professor of Dermatology, and DR. FRANCISCO LANCIS Y SANCHEZ, Assistant Professor of Legal Medicine and Toxicology.

The program at this time includes speakers from Venezuela, Mexico, Peru, Colombia, Chile, Puerto Rico, Cuba, and the United States.

Papers to be presented include those on topics such as the following: "Establishment of a Medical Department in Industry," "Work and Fatigue in Industry," "Effects of Environmental Conditions on the Health of the Occupational Worker," "Recording of Medical Case Histories," "Control of Malaria in Endemic Areas," "Occupation and Heart Disease," "The Role of the Anesthesiologist in Acute Poisonings," "Neurological Problems in Occupational Medicine and Toxicology," "The Treatment of Intoxications by Organic Phosphates," "Management of Berylliosis," "Treatment of Manganese Intoxications."

Occupational Health Institute

FRANK A. CALDERONE, M.D., of Great Neck, New York, Consultant in Industrial Medical Relations, was re-elected President of the Occupational Health Institute at the Annual Meeting of the organization May 18, at New York. Also elected were: *Vice-President*, THOMAS J. WINN, Vice-President of Charles Pfizer and Company, Inc., Brooklyn, New York; *Treasurer*, DAVID W. BLACK, Assistant to the President, Warner-Lambert Pharmaceutical Company; *Secretary*, MARGARET S. HARGREAVES, R.N., Executive Director, American Association of Industrial Nurses, Inc. OCCUPATIONAL HEALTH INSTITUTE is an educational affiliate of the INDUSTRIAL MEDICAL ASSOCIATION. It was formed to aid industry in the development of effective employee health programs, and to serve as a referral source of information to managements in dealing with problems of employee health. It is a non-profit organization, guided by a Board of Directors representative of management, the medical profession, nursing, and hygiene. Members of the Board of Directors include: DAVID W. BLACK; FRANK

Regardez!

BOARD CERTIFICATION

IN THIS and other Journals, numerous notices have been published as to the source of application blanks for certification under the Specialty Board for Industrial Medicine. At the Industrial Health Conference in Philadelphia, many physicians professed unawareness as to how these blanks could be obtained. They are procurable only from ERNEST L. STEBBINS, M.D., Secretary, American Board of Preventive Medicine, 615 North Wolfe Street, Baltimore 5, Maryland. Full instructions as to the method of submitting personal data accompany the blank forms. For those hopeful of acceptance in the Founders Group, time is a consideration, since that group will be closed as to applications after June 30, 1956. There is no time limit for other applications.

PROGRAM SUGGESTIONS

DOUGLAS A. RIES, M.D., St. Louis, is Program Chairman for the next Annual Meeting of the Industrial Medical Association at the time of the Industrial Health Conference in St. Louis, Missouri, April 20-26, 1957. Mindful of the general excellence of the IMA Program at the recent Philadelphia Conference, he bespeaks suggestions from readers of this Journal—not only as to an over-all format or plan for the various sessions, but also as to specific topics which will be as responsive to the needs of the field and as helpful in individual situations as was the program of the last Annual Meeting. DR. RIES may be addressed at 634 North Grand Boulevard, St. Louis 3. He will welcome suggestions—for Symposium and panel, as well as single subjects.

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Letters

We Are Taken To Task!

TO THE EDITOR: Sir, on page 41 (Adv. Section) of the May issue of I.M. & S., as the first item under the heading "News, Comment, Opinion," there is quoted the following: "A worker on the job must be both willing and able to be there; if one of these conditions is not satisfied, he will be absent." You should have extended and amplified your source reference to mention that this is the strong opening sentence in the introduction to a "Syllabus on Work Absence," written by Mark S. Blumberg, M.D., and James Coffin, A.B., under the direction of the U.S. Public Health Service occupational health program. This Syllabus was featured in the extensive discussions on absenteeism at the Sixteenth Annual Congress on Industrial Health at Detroit last January. It is a basic reference on the subject. More, it is a fine work; a credit to its authors. Why not name them? Critically, your friend. —G.R.C.

Assembly in Beirut

TO THE EDITOR: The Sixth Middle East Medical Assembly opened on April 17, 1956, on the Campus of the American University of Beirut, Beirut, Lebanon. Dr. Virgil C. Scott, formerly of Rochester, New York, and now Professor of Medicine at the American University of Beirut, was the Chairman. The program was organized with great ability, and efficiency. Many lecturers, mostly from the United States and Great Britain, participated. The medical problems of the Middle East, notably those of public health, cancer, and industrialization were discussed. Some of the papers related to military medicine and thus to occupational health. Microbiology was an important section of the discussions on Public Health. The program on industrial medical subjects included presentations by Drs. Robert Kurth, MacDonald Critchley, Charles A. Wells, and Edwin M. Goyette. . . .

Industrial medicine has developed around the oil fields and the pipe lines of the Middle East. Aramco (Arabian-American Oil Company) has a force of about 70 physicians who care for the employees and the families of the employees. However, the company physicians stationed in many remote places will take care of anyone needing medical attention. The same is true of Tapline (Trans-Arabian pipeline) which employs about 15 physicians. These physicians have helped to raise standards of medical practice in this part of the world. They have not only rendered service to the tens of thousands of American and European employees of the oil industry, but also have considerably improved the lot of the indigenous populations. . . .

Among the medical schools of the Middle East, might be mentioned the American University of Beirut, the French University of Beirut, and the Hebrew University of Jerusalem. The first is the oldest of the three; the second is headed by the Rev. Du Pre de la Tour, S. J., a colorful and fascinating character, who is a physician, a scientist, and a Jesuit priest, and who was a submarine officer in the French Navy during World War II. He is one of the few people in the Middle East who has the confidence of all elements of its population. He gained this reputation by being absolutely fair, just, and magnanimous to all, under all circumstances. The medical school of the Hebrew University of Jerusalem, was organized for undergraduate study in the medical sciences on the basis of a graduate school already in existence.

From the standpoint of medicine much has been done in the Middle East, and this Sixth Middle East Medical Assembly pointed the way for that which is still to be accomplished.

—ROLAND I. PRITIKIN, M.D.
Rockford, Illinois.

Books

Stress

FIFTH ANNUAL REPORT ON STRESS 1955-56: edited by HANS SELYE and GUNNER HEUSER. MD Publications, Inc., New York City, 1956, pp. 815.

The Selye group continues its engaging series of annual reports on "Stress." A few years ago stress widely was associated chiefly as of concern to engineers as they went about such activities as bridge building. Today "stress" drops off the tongues of physicians with no more hesitancy than attends such other words as "hormones" or "antibiotics." The Selye group define stress "as the sum of all nonspecific changes caused by function or damage. This definition includes the re-establishment of the normal resting state after discontinuation of treatment (recovery) or even during continued exposure (adaptation).

"It is evident from the current literature that many investigators use the word stress rather vaguely and that this leads to several serious misconceptions concerning the very nature of systemic (general adaptation syndrome) and topical (local adaptation syndrome) stress reactions. It may be well to re-emphasize, therefore, three important and far-reaching consequences of our definition.

"Stress is, by definition, a non-specific reaction.

"Stress is not necessarily a pathologic state, since, by definition normal function (e.g., muscular activity) can also act as a stressor; hence, the complete absence of stress is incompatible with life.

"Although all systemic stressors stimulate the pituitary-adrenal, the definition does not postulate that neither the hypophysis nor the adrenal cortex are indispensable for the manifestation of all stress reactions."

This year's report features: (1) the anti-stress drugs, with emphasis on phenylbutazone, barbiturates, morphine, chlorpromazine, and folliculoids; and (2) a series of contributions on stress by others not

of the Montreal group. Notable in these is the description by Conn, of the University of Michigan, who describes a new pathologic entity "primary aldosteronism" as thus indicated:

"It would appear to us that the syndrome of primary aldosteronism is now firmly established. It is likely that the condition which descriptively has been called 'potassium-losing nephritis' is a manifestation of primary aldosteronism."

"The major clinical manifestations of this syndrome consist of periodic, severe muscular weakness, intermittent tetany, and paresthesia, polyuria and polydipsia, and hypertension. There is no edema. The characteristic biochemical lesion in blood is comprised of hypokalemia, hypernatremia, and alkalosis (elevation of pH and carbon dioxide combining power). Total serum calcium is normal."

The ramifications of stress phenomena are astonishing and legion. In a recent series of skin patch tests employing a known highly active primary skin irritant (all this wholly unreported in this book) one subject fully was unresponsive while essentially all others promptly developed violent local reactions. On inquiry it was established that the resisting subject was undergoing active treatment with an anti-inflammation agent for an arthritic state. The presumption is that in some manner this drug protected this individual against irritant action of the industrial agent under study. This small happening in no wise would have amazed the authors of that article within this book entitled "Hormonal Influences on Inflammation and Detoxification." Their entire paper contemplates just such events. This is but one example of the myriad of manifestations all encompassed in this exposition of stress. This is no book to be read as a continuity. It is one to be owned, to be studied and referred to. Many events of the day in medicine become not simple but at least understandable.

Poisons

CLINICAL AND THERAPEUTIC ASPECTS OF THE POISONINGS (Klinik und Therapie der Vergiftungen): DR. SVEN MOESCHLIN. Georg Thieme Verlag, Stuttgart, 1956, Second revised edition, pp. 521, with 64 illustrations (Price, 59 Deutsche Mark).

The entire gamut of poisonous materials is presented in this book with much attention to detailed instructions on therapy. The material is assembled from the author's experiences at the University of Zurich Medical Clinic, a dozen of the outstanding texts of the last 10 to 20 years, a list of which is included, and an extensive group of references to the literature. An author and subject index with many entries facilitates the ready use of the book and permits quick reference in the event of an emergency.

An impression of the cross-section of poisoning cases which are actually occurring is afforded through a table listing over 2000 cases handled at the Zurich Clinic from 1935 through 1949. Carbon monoxide cases account for the greatest number, with hypnotics, sedatives, and ethyl alcohol following in that order. The group of 34 cases of thallium poisoning, with the number increasing over the latter years, is the basis of a thorough account accorded to this substance.

The organization of material includes occurrence, toxicity, acute and chronic manifestations, prognosis, pathology, and therapy. After presentation of the inorganic poisons, a complete coverage is accorded the organic compounds including the analgesics and antipyretics, the insecticides, the most important war gases and the newer nerve gases—organic phosphates with cyanide and with fluoride in the molecule. Toxic effects of the vitamins and hormones are then considered, followed by the poisonous plants and their derivatives, antibiotics, poisonings by foodstuffs, and animal poisons such as insect stings and snake venoms.

The book is written for the clinician and the practicing physician, and provides information of value in the diagnosis and treatment of a great range of poisonings. —WARREN A. COOK

Into the Home

AMA SCIENTIFIC EXHIBITS, 1955: Published for the American Medical Association by Grune & Stratton, New York, 1955, $20.00, pp. 784.

A multitude of physicians every year attend the annual AMA sessions. Yet it is unlikely that in any one year as many as 10% of the total number of physicians in the country have appeared. For those who do register, the outstanding single attraction is the scientific and technical exhibit. So gigantic is this that not possibly may anyone examine all of it. To overcome the handicap of the absent ones and the ones present who cannot properly inspect every display, this volume has been prepared. The outstanding one-third of all scientific exhibits at the Annual Meeting are here portrayed, but only in black and white. The majority are photographed in great detail. This book is the exhibit itself. All that is missing is the exposition of the exhibitor. One paragraph of the preface uses this language: "Until the publication of this volume, Scientific Exhibits could be seen only in one place and at a designated time. Now, for the first time, physicians unable to attend the Annual Meeting are given the opportunity to see Scientific Exhibits reproduced in the pages of a single volume. They are enabled to read and study these Exhibits without hurry and at their own convenience."

The AMA exhibits constitute a spectacle colorful and informative. This book in graphic style brings the major exhibits right to the physician's easy chair for quiet examination and, prospectively, in many instances, with greater benefit than hurriedly seeing them in the exhibition hall.

For All

THE INTERPRETATION OF THE UNIPOLAR ELECTROCARDIOGRAM, by GORDON B. MYERS, M.D. The C. V. Mosby Company, St. Louis.

This work has been used to supplement the Graduate Course in electrocardiography given at Wayne University College of Medicine. Nevertheless, it should prove very helpful to the beginner in electrocardiography and to those who possess basic knowledge of fundamental principles.

The value of multiple precordial leads to cover the postero-lateral and the posterior aspects of the left ventricle, as well as the high precordial leads to explore the base of the heart, is simply portrayed and explained. The description of the direct leads in experimental myocardial infarction lays the groundwork for interpretation of the clinical electrocardiogram in this condition.

A practical guide to interpretation of the electrocardiogram is to be found in the summary of findings. In particular, the section of the summary which deals with myocardial infarction is a classic in itself. The technique of multiple leads should be helpful in the detection of infarction usually not seen on routine leads. —S. CHARLES FRANCO, M.D.

INDUSTRIAL MEDICINE AND SURGERY

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The United States Labor Force

SIX HUNDRED years before Christ, Anacharsis made this quaint observation: "There are three sorts of people: those who are alive, those who are dead, and those who are at sea." Statements about the U. S. labor force contain some of the same quaintness: Those who are employed, those who are fit for and seek employment but have none, and those who are fit for employment but have no intention of working or earnestly seeking work. These last, a pitiful group, are the ones in a mental or emotional sea.

The newest (April) labor force figures emanating from the Departments of Labor and Commerce indicate that the total labor force (not including military personnel) is 66,554,000. Of this number 63,990,000 are at work, a record for that month. The unemployment total is 2,564,000—a drop of 270,000 over previous reports. The employed work force represents a gain of 912,000 over the previous month's report. Employment in factories utilizes the services of some 16,728,000 workers. Manifestly the difference embraces the workers engaged in a multitude of activities from farming to mining and transportation.

These new figures from Washington are limited to totals. It becomes necessary to revert to older figures for many details of concern to occupational health. In a slightly earlier report (February, 1956) the total labor force was set forth at 65,500,000—with actual civilian employment at a figure of 62,600,000, while 2,900,000 were unemployed but employable. The same report stated that the total of non-agricultural wage and salaried employees was estimated to be 49,400,000. By implication the difference between the total civilian employment and non-agricultural wage and salaried employees would represent agricultural workers. That figure stands at 13,200,000. Actually that assumption is not warranted, since the difference embraces other categories than agricultural workers. The latest figure in hand as to agricultural workers is 7,407,000. The agricultural work force consistently is diminishing. It is estimated that yearly, 600,000 members of the agricultural population, but not all agricultural workers, leave the farms.

The latest total population figures here available of the United States, including armed forces overseas, approximated 165,248,000. The number in the group accepted as constituting the work decades (i.e., from 20 to 69 years of age) approximates 59% of the total. Applying that figure to the present over-all population—after deducting an approximate 2,153,000 as being institutional cases or otherwise unable to work—it appears that the topmost potential labor force of the nation is near to 94,517,080. Yet it is known that of the total population 14 years of age or over, some 47,000,000 men and women are not in the labor force. That figure need not be alarming, since it includes some 35,000,000 housekeepers.

THERE are no reliable statistics as to what proportion of the entire labor force can avail itself of the benefits of substantial industrial health programs. Estimates range from less than 10 million to more than twice that number. The variations no doubt are influenced by the different concepts regarding industrial health, and these, in turn, are governed by circumstances—such as the kind of industry, and, sometimes, the location.

The elements of a complete medical service for employees are well known. They are numerous, but by no means does every employment situa-

tion use all of them. The large majority, being of the small plant type, have little more than the curative, or reparative, for the care of injuries and occupational diseases—the latter in small ratio to the former. The curative is, perhaps, the common denominator.

The fact, therefore, insofar as it can be evolved from present information, is that most working people go about their duties unserviced by well developed industrial medical activities. The recognition of this has led to some peculiar conclusions. Often heard is the statement that general practitioners render medical services to 85% or more of workers with health affronts growing out of their occupational pursuits. In various publications and communications this percentage has gone as high as 94. In the manner of statements so often thoughtlessly repeated that they become accepted as truths, this has been made the premise of many a solemn and pontifical pronouncement.

Among its almost weird variations are the averments that "94% of general practitioners are doing industrial medicine," and that "94% of industrial medicine is done by general practitioners."

It is possible that a large percentage (maybe even 94%) of the *curative* part of industrial medicine is done by general practitioners insofar as certain kinds of injuries are concerned, with a lesser percentage of occupational diseases treated by them. That is because the mostly small industries in which these injuries and occupational diseases occur have not yet grown beyond the primitive or compensation stage of industrial medicine.

THE ANALYSIS of the situation regarding these percentage figures must await further pursuit. The interest here is to point out that insofar as employee medical services do not extend beyond the curative and reparative, the elements of industrial medicine that endow it with its name and significance are lacking in respect of a large majority of the total working force. Scarcely has industrial medicine touched its opportunities when it leaves such a large percentage of its proper work load to others.

The First Controlled Experiment

AND THE KING spoke unto Ashpenaz, the master of his eunuchs, that he should bring certain of the children of Israel, and of the king's seed, and of the princes; children in whom there was no blemish, but well favoured, and skilful in all wisdom, and cunning in knowledge, and understanding science, and such as had ability in them to stand in the king's palace, and whom they might teach the learning and the tongue of the Chaldeans. And the king appointed them a daily provision of the king's meat, and of the wine which he drank; so nourishing them three years, that at the end thereof they might stand before the king. Now among these were of the children of Judah, Daniel, Hananiah, Mishael, and Azariah: unto whom the prince of the eunuchs gave names: for he gave unto Daniel the name of Belteshazzar; and to Hananiah, of Shadrach; and to Mishael, of Meshack; and to Azariah, of Abednego. But Daniel purposed in his heart that he would not defile himself with the portion of the king's meat, nor with the wine which he drank: therefore he requested of the prince of the eunuchs that he might not defile himself. Now God had brought Daniel into favour and tender love with the prince of the eunuchs. And the prince of the eunuchs said unto Daniel, I fear my lord the king, who hath appointed your meat and your drink: for why should he see your faces worse liking than the children which are of your sort? Then shall ye make me endanger my head to the king. Then said Daniel to Melzar, whom the prince of the eunuchs had set over Daniel, Hananiah, Mishael, and Azariah, prove thy servants, I beseech thee, ten days; and let them give us pulse to eat, and water to drink. Then let our countenances be looked upon before thee, and the countenance of the children that eat of the portion of the king's meat: and as thou seest, deal with thy servants. So he consented to them in this matter, and proved them ten days. And at the end of ten days their countenances appeared fairer and fatter in flesh than all the children which did eat the portion of the king's meat.

—The BOOK OF DANIEL, I, 3-15.

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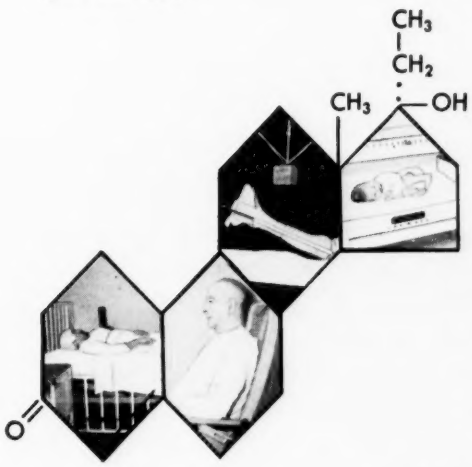

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News, Comment, Opinion

SIDNEY J. HARRIS, in his column in the *Chicago Daily News*, May 3, 1956, asks: "Who gives the personality test to the Personnel Director?"

In the Jug

INDUSTRIAL Nurse Section of the State Nurses' Association held a dinner April 24 at 6:00 P.M. at the Fairfield County Jail. Following the dinner, there was a tour of the health facilities.

—*Hartford, Connecticut, Times*, April 5, 1956.

First Medical Program

GREAT LAKES Physical Medicine and Rehabilitation Association held its first Annual Medical Program Meeting at the University of Buffalo, School of Medicine, Buffalo, New York, May 26, 1956. The subject was "Study of the Hand." A dinner for the members followed, at the Park Lane Restaurant.

X-Ray Technicians

AMERICAN Society of X-ray Technicians will hold its Annual Convention at the Kentucky Hotel, Louisville, Kentucky, June 17-21, 1956. Technicians, registered and non-registered, are invited to attend. The program offers opportunity to acquire new technical information as developed in the educational panels. Features will be a refresher course and a workshop. Attendance of 1200 is expected.

Auto Exhaust

AIR POLLUTION FOUNDATION, of Los Angeles, on May 3 released a technical report on "The Movement of Polluted Air in the Los Angeles Basin," which shows: (1) that, with respect to hydrocarbons, it corroborates the evidence of others that auto exhaust is a major contributor to air pollution in the Basin; (2) that most of the time the air in which severe smog develops spends two days or less in the Basin. It does not require several days of air stagnation to produce smog. The complicated analysis of wind paths and movements of pollutants is based on findings by the Foundation during the months of August, through November, 1954. At that time, the Foundation conducted an aerometric survey with the

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Internist: (b) Diplomate, '54; graduated Cum Laude, college & medical school; 3 years, USAMC (japan) 3yrs. priv pract. medicine; interested cardiology; prefers industry; age 34.

Internist: (c) 33; M.D., Tufts; Board eligible; completing Naval duty this fall; several yrs. priv pract. medicine, before military service; prefers industrial medicine, any locality.

Internist: (d) For Houston, Texas area only; age 32; Diplomate; well qual. cardiovascular; 3 yrs. internist, excel grp; several yrs. ass't med dir. life insurance company; now wishes industrial medicine, full or part time.

Industrial Hygienist: (e) B.S., M.S., Chemistry; able develope or extend program of indus hyg, occupational or public health or safety; 5 yrs. supervisor, indus hygiene & safety; 5 yrs. Dir of Health & Safety, one of America's largest companies, metal container industry, outstanding man, recommended without reservations.

General Surgeon: (f) 33; years' residency, pathology; 5 yrs. residency, surgery; 1 year, private surgical pract; exceptionally well trn'd; seeks foreign industrial post.

Medical or Associate Medical Director: (g); M.D., Ohio State; Board qual, preventive medicine; M.P.H., Harvard; currently on staff, dept. indus medicine, large clinic; seeks appointment with emphasis on preventive aspects; middle 30's.

Assistant Medical Director: (h) 32; M.D., Wisconsin; M.S. (indus med); Rochester; 9 months, fellowship, A.E.C. (indus med); seeks industrial medicine with or without atomic installations.

Staff or Ass't Medical Director: (i) 12 yrs, Ass't Medical Dir, Ass't Dir and, now, Administrative Director, Liberal Arts University; present position offers little opportunity for futher development; seeks industrial medicine; well experienced, both administratively and clinically; any locality but prefers Penna or East; middle 40's.

Staff Physician: (j) Completing training in internal medicine; prefers industrial medicine in Calif., Texas, Ohio, Penna, N.J.; Medical Degree, Duke; age 29; married.

Staff Physician: (k) Two years, medical officer; 3 years, private gen'l practice; desires industrial medicine as career; consider any large city but prefers N.J., Pa., N.Y; Medical Degree, Jefferson; age 30.

Staff Lge Co or Med Dir., Small Co: (l) Well qualified phy & surgeon seeks less work load due to mild coronary suffered 1953; recovered; 2 yrs. Ass't Medical Officer, US Navy; 7 yrs. successful private gen'l practice; Medical Degree, Jefferson; prefers Pa., Ga., any Eastern or Midwestern State; ideal man for clinical work in gen'l medicine, minor surgery and some administrative in large industrial medical department, or as Medical Director, smaller company, age 35.

Staff Physician; (m) Past 5 years, successful private gen'l practice; seeks industrial medicine with regular hours, salary and security as career; any locality but prefers Virginia, Pa., or East; Medical Degree, Hanneman; early 30's.

These are but a few of the many well qualified men in our files seeking industrial medicine posts. If you wish to reorganize or augment your present medical staff, please write us for the names of men immediately available, qualified to head departments or act in staff capacities.

cooperation and financial support of the Los Angeles Air Pollution Control District.

Etiquette in the Office

I AM AN industrial nurse. My employer often brings visitors into the medical office and usually introduces them to me. Should I rise to greet them? What about men who are obviously younger than I am? If there are not enough chairs in the room, should I relinquish my chair or remain seated while the visitors stand? *Answer*: If the introduction is simply a routine business one, you should remain at your desk and continue your work after acknowledging it. It would hardly be efficient for you to stand while they sit and chat. However, if your employer shows that he wants to sit in that office and talk to his visitors, you should rise and find chairs for them.

—From "The Correct Thing," ELINOR AMES, *New York Daily News.*

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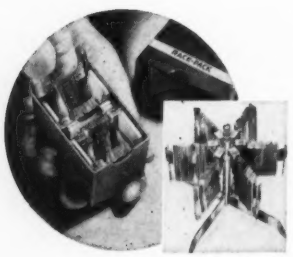

Specify RACK-PACK* packages in ordering gross and half gross quantities . . . eliminating unwrapping—handling—racking of individual blades. A time and labor saver for the O.R. personnel.

It's Sharp

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New Data Sheets

MANUFACTURING Chemists' Association announces publication of two new safety data sheets, arsenic trioxide (SD-60) and phthalic anhydride (SD-61). The booklets give properties and essential information for the safe handling and use of the two chemicals, including material on shipping containers, storage, waste disposal, and health hazards and their control. Although hazards exist, both arsenic trioxide and phthalic anhydride can be handled, shipped and stored safely provided the employees involved are familiar with the recommended precautionary measures. The safety data sheets are available from the Association, 1625 Eye Street, Northwest, Washington 6, D.C., at 30 cents each.

Who Dealt?

SAFETY poker game improves accident record at Kaiser Aluminum & Chemical Corporation, Mead, Washington. Each week, playing cards—each bearing different slogan—are shuffled by union stewards, dealt by IBM machines, attached to each employee's pay stub on special ticket. Front of ticket has employee's name, clock number, and date. If he has had lost-time accident during period, he is dealt out. Every five weeks, two employees holding high and low poker hands get $100 pots. In addition, 25 employee clock numbers are drawn by stewards weekly. First 10—contacted by safety engineer in order lots were drawn—who know slogan on their cards get $5 gift certificates.

—*Industrial Relations News*, April 21, 1956.

No Problem

EXCESSIVE absenteeism is no problem among workers in companies newly-established in non-industrial areas, according to a study of 12 plants—representing textile, apparel and electrical machinery industries—located in recent years in less-developed areas of eastern and western North Carolina. Survey by North

Carolina Employment Security Commission says companies planning to open branches in underdeveloped areas will find that workers in these areas possess or can acquire sense of job responsibility. Findings include: Absenteeism rates generally lower than in similar operations elsewhere, management officials of firms contacted state. Four of six companies which compiled data had no monthly absenteeism rate higher than 4.0%—considered to be "normal" expectation on basis of national estimates. Five of six firms would have bettered this rate if single month's poor experience in one plant were excluded. Absenteeism during harvest season in these rural areas is no higher than in any other period of year, despite widely-held belief to contrary. Larger plants have lower absenteeism rate. This may be because in large plant excused absenteeism is less likely, since personal relationships between employer and employee are not so strong an influence as in smaller plant, the study said.

—*Industrial Relations News*, April 28, 1956.

The Aging

UNIVERSITY of Michigan's Ninth Annual Conference on Aging, to be held in Ann Arbor, July 9-11, 1956, will deal with the topic "Health for the Aging—Medical and Social Services." Several units of the University of Michigan, the Michigan State Medical Society, and a number of State and Federal Agencies are serving as co-sponsors with the Division of Gerontology. As in previous years, the Conference will be national in scope and will bring together the country's outstanding leaders in the fields of health, medical service, biological research, and community planning. The program will consist of General Sessions on health topics of interest to all groups; Clinics on medical topics of concern to physicians, psychiatrists, dentists, nurses, occupational therapists, and other specialists; and Workshops in the areas of health services, welfare programs, medical financing, institutional care, occupational and diversional activities, housing, community health planning, and geriatric training of medical and other personnel. In addition, a Research Seminar comprised of outstanding scientists will discuss the "Health Status and Needs of the Aging Population." For further information, write DR. WILMA DONAHUE, Division of Gerontology, 1510 Rackham Building, Ann Arbor, Michigan.

Agreement in Pennsylvania

PENNSYLVANIA physicians have reached an agreement with the United Mine Workers Welfare and Retirement Fund which may set a pattern for resolving disputes between unions and organized medicine in several other states. . . . The final agreement was negotiated principally by Dr. Warren F. Draper, Medical Director of the Fund, and Edgar W. Meiser, M.D., Chairman of the Pennsylvania Medical Society's Committee on Medical Economics. Among the main points: "Organized medicine does not concede to a third party the prerogative of passing judgment on the treatment rendered by physicians." However, it must assume the responsibility of searching out abuses and instituting measures to correct them. The UMW Fund will cooperate wholeheartedly by

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three dozen needle sutures
in sterile pack jars—ready to use—
includes chrome-plated rack—
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the FIRST and ONLY "instant" ready-to-use powder that makes official Burow's Solution U.S.P. plus antiseptic*

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providing information regarding alleged abuses to hospitals and medical society committees—who will police the program. Medical Audit Committees in all hospitals will evaluate "the quality of medical service provided" and review "hospital admissions and length of stay, including their necessity." "Adequate consultation after hospital admission" is vital "to insure a high standard of medical care." Further consultation may be requested by the UMW Fund "for just cause—such as recurrent admissions, repeated referrals, prolonged medical care and excessive hospital stay." Any doctor may apply for listing as a participating physician. If his application is rejected, he may appeal to the County Medical Society's Liaison Committee, and, if necessary, to a district, and finally to a state Liaison Committee. "In addition to violation of the principles of medical ethics, such procedures as unnecessary hospitalization, undue length of stay, unnecessary surgery, services of an inferior quality and the like, shall be justifiable cause for removing a physician from the list." Grievances over removals may be appealed as above. Future changes "in basic procedure or policy" must be submitted by the UMW Fund to the medical society's Committee on Medical Economics for approval.

—From *Medical News*, 2:7 (March) 1956; see also *J.A.M.A.*, May 12, 1956.

Must be Faced

E. S. WILLIS, Employee Benefits Consultant for General Electric Company—addressing the Annual Meeting of the American Gas Association, at New York, April 4, 1956—said "the very future of our present private practice of medicine may rest largely in the hands of men competent and vigorous enough to develop health insurance programs that bring new protection and security through the private rather than the socialized approach." Mr. Willis cited the new medical insurance program adopted by more than 200,000 General Electric Company employees last year as an example of the "private approach" to health insurance, and listed the main principles on which the plan was based: "Medical costs must be faced squarely as a part of the cost of living, and handled through the normal procedures of budgeting and saving. People are happy to use their spendable income for the pleasant

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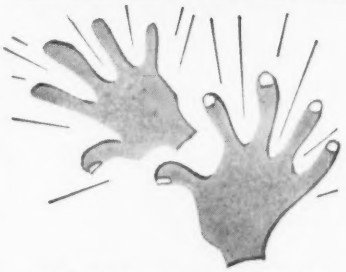

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things in life, but when an expenditure involves medical costs, they suddenly feel that even a small bill should be handled by somebody else—through insurance or even by subsidy. There is a need to establish proper values and a balanced priority of expenses. People must become educated to the basic principles of sound insurance. Individuals need to become as well-informed in health insurance as they are in automobile or household insurance, where nearly everyone recognizes the value of bearing the small cost through deductibles. People need to maintain an interest in medical costs. This helps to guarantee all necessary care but to deter unnecessary use of medical facilities. When people forfeit interest, costs rise. Within these principles, private health insurance should be available to cover all forms of medical costs, just as do automobile fire and life insurance. That is, it cannot be confined solely to hospital or surgical costs. Physicians, nurses, medicines, and the like should be provided for in proper balance and flexibility."

—General Electric Release.

Retirement Planning

WORKERS want company help in retirement planning, according to survey of 250 company pensioners by Thompson Products, Inc., Cleveland. Other findings: Freedom from financial problems is more important to 82% of those surveyed than having something else to do. Personal savings are best supplement to pension income for 53%; paid-for home, for 40%, and another job, for 7%. Hobby is considered best arrangement for leisure time by 47%; being ready to loaf, by 40%, and another job, by 13%. Retirement planning should begin at 55 or before, according to 74%; at 60, according to 15%, and at 64, according to 11%. Private interviews are most helpful company assistance to 40% of the 96% who wanted company help; group meetings, to 40%, and books, pamphlets and articles, to 13%.

—*Industrial Relations News*, May 19, 1956.

Policies As To Cardiacs

DURING the summer of 1954 the Massachusetts Heart Association, concerned with the situation of the cardiac patient in industry, sponsored a survey to discover facts involved in the hiring, rejection, and retention of this working group. A study was made of 100 employers in the Greater Boston Area, including 51 in manufacturing and 49 in non-manufacturing groups. Employers ranged from those employing under 100 to those with more than 20,000 workers, the largest number being in the group from 500 to 1000. The over-all labor force totaled 176,024, with 53,891 in manufacturing and 122,133 in non-manufacturing groups. The employers selected for study were those who might well offer employment to persons with cardiac disease (insurance companies, hospitals, banks, department stores, universities, and light-manufacturing industries). The personal interview, rather than a printed questionnaire, was used as a method of survey . . . . Of the 100 employers surveyed, only 54 required a pre-employment examination in all cases, and six required it in certain classes of workers. These examinations were more common among the larger employers. It appears difficult to determine exactly the purpose of pre-employment physical examinations, but the impression is gained that they are used in more cases as an exclusion measure than as a basis for selective placement. Only nine employers carried out periodic examinations of all workers, and 24 kept a check on their em-

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The addition of silicones makes this remarkably effective bland vanishing cream chemically inert, adhesive, and water repellent. It goes on the skin smoothly and easily, and it is free from any "feel." The invisible film is tough, durable. It protects against soaps, detergents, chemical dusts and powders, dilute acids and alkalies. The cream is non-toxic, does not interfere with normal skin gland function, and is buffered to the average pH of the acid mantle of the skin. Available in 3 oz. tubes or 1 lb. jars. Write for details.

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Silicote protects skin against aqueous irritants and permits skin to heal. Patients can continue normal work during Silicote use. It adheres to skin, is inert. Send for samples.

1. Talbot, J.R. et al: J. Inv. Derm. 17:125
2. Morrow, Grant: Calif. Med. 80:21

SILICOTE

SILICONE OINTMENT

ARNAR-STONE LABORATORIES, INC., MOUNT PROSPECT, ILLINOIS

ployees who were known to have cardiac conditions . . . Twenty-five employers stated that it was their unequivocal policy to exclude all persons with cardiac disease. This group included three insurance companies, one hospital, one department store, two public utilities, one city government, four electronic or electric manufacturers, and two rubber companies. The significant question is, How much cardiac hiring is done by the other 75 companies that do not have a stated exclusion policy? Fourteen companies had insufficient information to know whether or not they hired cardiac patients. Of the remaining 61 employers, three had hired no persons with cardiac diseases in the preceding six months in spite of the fact that each had hired more than 100 workers in that period; 21, each having less than 100 employees, had taken on no workers with heart disease. In effect 49 employers had hired no workers with cardiac disease over the six-month period. In the over-all group 13,439 workers had been employed in the six-month period, of which 99 had cardiac disease. This number was hired by 20 employers, but five of them accounted for 65% of the hirings. We were able to obtain statistics on the incidence of heart disease from 84 employers, representing 121,000 workers, during the preceding 12 months. Three hundred and forty-seven cases were reported, of which 262, or 75%, were cases of coronary thrombosis. Of this group 68 occurred while the patients were at work, and 194 while they were off the job. It appeared that many companies seemed willing to retain or take back their former cardiac workers. In the 262 cases of coronary thrombosis, 217 patients had been reemployed—207 full-time, and 10 part-time. Eighty-one had returned to their previous jobs. Of the 77 cases of other types of heart disease, 55 had returned to work—53 full time, and two part time. In total, 80% of all patients with cardiac disease returned to work, 96% to full-time jobs. This is most encouraging in demonstrating the number of persons appearing to be re-employable; also, it validates the assumption that the selected employers do have suitable jobs for workers with heart disease. Seventy patients had not returned to work. Of these, 28 were still convalescent; 34 had died; three had retired; three were discharged; for one, no suitable job was available; and, in one other case, company policy prohibited re-employment. Most companies intend to re-employ workers after convalescence.

—From "A Survey of Employment Policies as Related to Cardiac Patients in Greater Boston," by WALTER P. MUTHER, in *Industry*, October, 1955.

The Finer Things

FOR THE $110 per death we spend on cancer, we spend at least $1,200 per death on infantile paralysis. And for the $25,000,000 spent on cancer research annually, we spend $65,000,000 on ball point pens, $60,000,000 on lipstick and nail polish, and nearly four and a half billion on cigarets.

—From "What Cancer Means to Industry" by DAVID M. REED and ARTHUR S. ALBRIGHT, *in J. Michigan State M. S.*, April, 1956.

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AVAILABLE

Acid Mantle Creme pH4.2 in 1 oz. tubes, 4 oz. and 16 oz. jars. Acid Mantle Lotion pH4.5 in 4 oz. squeeze bottles and 16 oz. bottles.

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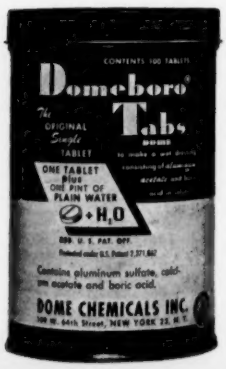

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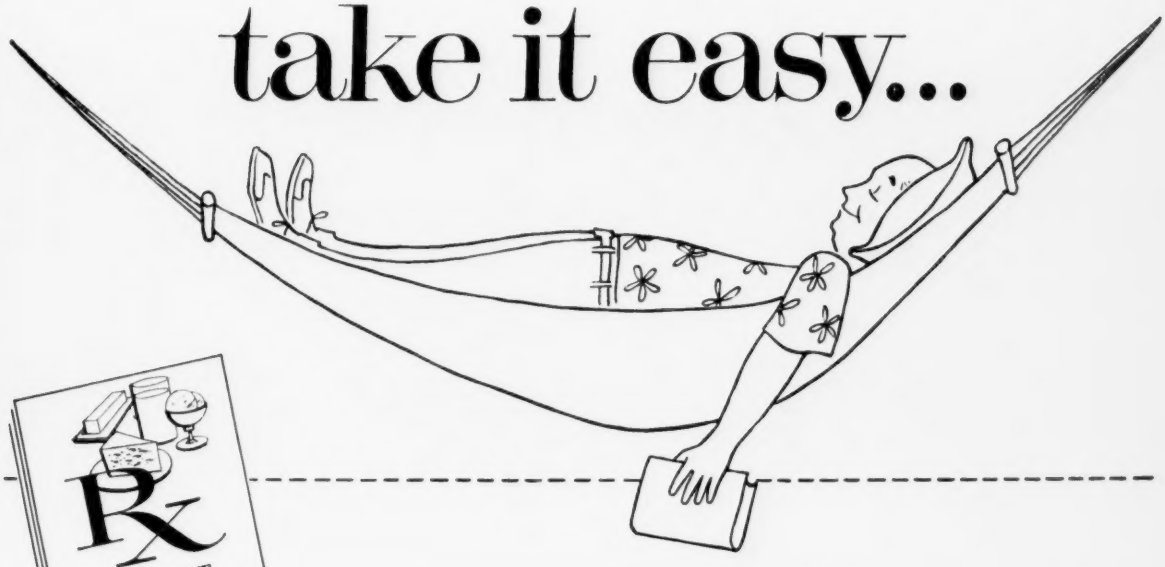

As energy requirements decrease, foods must be carefully chosen to provide nutrient needs. Medically supervised studies show that weight can be lost and desired weight maintained on a palatable diet of familiar and well-liked foods. This diet supplies generous quantities of high quality protein and calcium . . . nutrients frequently low in the food intake of older people.

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Descriptive literature and details of a 15-day no obligation trial plan will be sent on request.

Bibliography:

1. OVERHOLT, B. M.: CARDIOLOGY — Routine Electrocardiography in Industry. INDUSTRIAL MEDICINE & SURGERY, 19:11, Nov. 1950.
2. TRAPNELL, JOHN M., JR., and LINDER, E. KERN: "The Electrocardiogram in Industry" INDUSTRIAL MEDICINE & SURGERY, August, 1955.
3. DURHAM, J. R., and MCGEE, L. C.: "The Electrocardiogram in the Examination of the Industrial Worker" ANNALS OF INTERNAL MEDICINE, 41:5, November, 1954.

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The use of G-11® soaps in washroom dispensers can serve two very important functions—the promotion of better personal hygiene among employees and the protection of employees against skin disorders caused by bacteria. Knowing that the cleanser he uses is an antiseptic makes the employee more conscious of his personal cleanliness and encourages washing. Hexachlorophene soaps and detergents reduce the number of bacteria on the skin and provide a built-in protection that continues to inhibit growth after washing.

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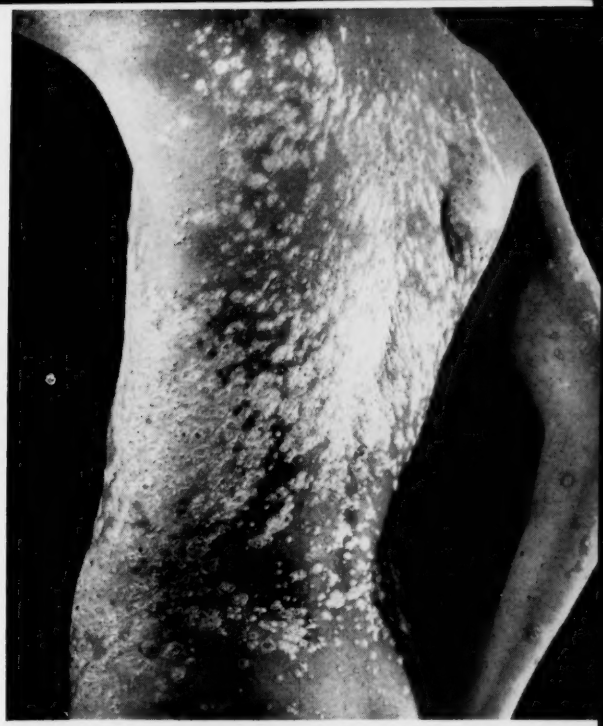

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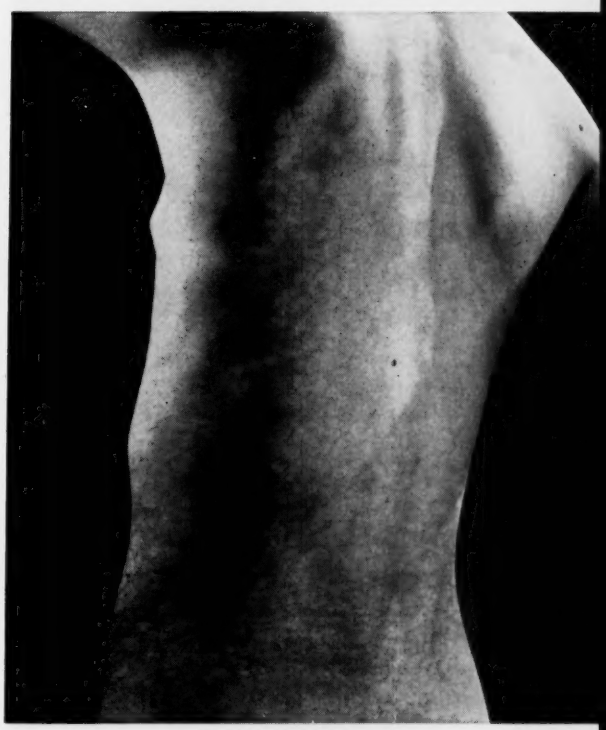

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* Goodman, L. S. & Gilman, A., *Pharmacological Basis of Therapeutics*, 2nd ed., 1955, pp. 1103-04.

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1. J.A.M.A. 159:645 (Oct. 15) 1955.
2. J.A.M.A. 158:386 (June 4) 1955.

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